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A

FAMILY ENCYCLOPÆDIA;

OR, AN

EXPLANATION OF WORDS AND THINGS

CONNECTED

WITH ALL THE ARTS AND SCIENCES.

ILLUSTRATED WITH NUMEROUS WOOD CUTS.

BY GEORGE CRABB, A. M.
Author of 'English Synonymes,' 'Technological Dictionary,' and 'Historical Dictionary

Mercury, guided by Minerva, bearing Science round the World.

ENLARGED AND IMPROVED.

TO WHICH IS ADDED,

QUESTIONS ADAPTED TO THE TEXT,

BY THE

AUTHOR OF POPULAR LESSONS.

New-York:
PUBLISHED BY C. S. DUNNING.
1831.

Southern District of New York, ss.

BE IT REMEMBERED, That on the 24th day of January, A. D. 1831, in the fifty-fifth year of the Independence of the United States of America, Henry C. Sleight, of the said District, hath deposited in this office the title of a book, the right whereof he claims as proprietor, in the words following, to wit:

"A Family Encyclopædia; or Explanation of Words and Things connected with all the Arts and Sciences. Illustrated with numerous wood cuts. By George Crabb, A. M. Author of 'English Synonymes,' 'Technological Dictionary,' and 'Historical Dictionary.' Mercury, guided by Minerva, bearing Science round the world. Enlarged and improved. To which is added, Questions adapted to the Text, by the Author of Popular Lessons."

In conformity to the Act of Congress of the United States, entitled, "An Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the time therein mentioned." And also to an Act, entitled, "An Act, supplementary to an Act, entitled, an Act for the encouragement of Learning, by securing the copies of Maps, Charts, and Books, to the authors and proprietors of such copies, during the times therein mentioned, and extending the benefits thereof to the arts of designing, engraving, and etching historical and other prints."

FRED. J. BETTS,
Clerk of the Southern District of New York.

SLEIGHT & ROBINSON, PRINTERS.

Gift of Miss Sue Dunbar

1831

PREFACE,

TO THE LONDON EDITION.

THIS volume contains definitions of all terms of art and science, with such additional explanations, in some cases, as serve to illustrate something more than the bare meaning of the word. It is drawn up with special regard to brevity, in order to comprehend within a convenient space all words on which the reader may wish for immediate information. To the juvenile and less informed class of readers, a work of this kind cannot fail to be acceptable, particularly as it has been so liberally supplied with illustrations by means of engravings. Although so small in bulk, yet this book will be found to contain a vast number of words which are not to be met with in any other work whatever, the explanation of which is nevertheless highly necessary for those who are not in the constant habit of hearing them used in ordinary discourse. Of this description are the Latin phrases now adopted into our language, as Sine qua non, Ne plus ultra, and the like. The historical essays on each science, which have been expressly composed for this Dictionary, serve to show the progress of the arts and sciences from the earliest periods to the present time.

NOTE TO THE NEW-YORK EDITION.

THIS edition has been carefully revised, and such alterations and additions made as were necessary to perfect the work, and adapt it to the United States. The numerous local articles, which abounded in the English copy, have been omitted in this, and their place supplied by such as were suited to our own country. Many errors in the Natural History have been corrected, and numerous

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articles added. The present volume contains between seven and eight hundred handsome engravings; a great number of new cuts having been inserted, while most of the original ones have been retained. A series of questions adapted to the work, have been appended. It is believed that this edition is well adapted to the use of the young, and to those whose avocations prevent them from making profound researches, or whose means are restricted.

It is often said that superficial acquirements mark the present age;—that abundance of abstracts and compendious methods of obtaining knowledge, in some degree exclude the necessity of diligence and patient thought, and that innumerable facilities and mechanical helps encourage indolence rather than incite to application. To this it may be replied, that those who without these helps would know nothing beyond the narrow range of their own observation, may now, for a small expense of time and money obtain a considerable fund of information from this book, and from many others of a similar character and design. The minds of children, and persons of neglected education, can here be furnished with particular facts in Physics, in Chymistry, in Natural History, and in Intellectual Philosophy, that may open the senses to new perceptions, may stimulate curiosity, may turn the mind inward to the cultivation of its own ability, and may suggest the wisdom of God's laws, and the bounty of his providence. Such being the use of which this work is susceptible, and its execution being as faithful and perfect as its limits permit, it will be found serviceable as a school book—its simplicity of definition and variety of matter strongly recommending it to those engaged in Education.

AUTHOR OF AMERICAN POPULAR LESSONS.

A

DICTIONARY

OF

GENERAL KNOWLEDGE.

A, the first letter of the alphabet in most languages. It stands for the indefinite article, as, a man; for the sixth note in the gamut; for the first of the dominical letters in the calendar; as a numeral for one, among the Greeks, and 500 among the Romans, or with a stroke over it, Ā, 5000; for an abbreviation, as A. M. Anno Mundi, A. B. Baccalaureus Artium, Bachelor of Arts, A. C. Ante Christum, A. D. Anno Domini; in antiquity, A. Augustus, A. A. Augusti, A. A. A. Aurum, Argentum, Æs; among chymists, Amalgam.

AAM. A liquid measure, used by the Dutch, containing 280 pints English measure.

ABAFT. A sea term, the hinder part of a ship.

ABAGI. A silver coin in Persia, value about thirty-six sols, French money.

ABATIS, or ABBATIS. In fortification, an entrenchment made of felled trees, the trunks being planted in the ground, and the branches interwoven.

ABBEY. A monastery or convent, governed by a superior under the title of Abbot when ocupied by males, and Abbess when appropriated to females. At the reformation there were 490 of these establishments dissolved.

ABBREVIATION. The contracting of a word or sentence, by omitting some of the letters.

ABDOMINALES. The fourth order of fishes, which have the ventral fin placed behind the pectoral fin; as salmon, trout, herrings, gold fish, carp, sprats, &c.

ABDUCTION. The unlawful carrying away a person.

ABERRATION (in Astronomy.) An apparent motion of the celestial bodies, produced by the progressive motion of light, and the earth's annual motion in its orbit. Thus, in the sun, the aberration in longitude is 20″ constantly, that being the space moved by the earth in 8′ 7″ of time, the interval in which light passes from the sun to the earth.

ABETTOR. One who instigates another to commit a crime.

ABEYANCE. The expectancy of an estate, honour, or title.

ABLUTION. A religious ceremony of washing the body, still used by the Turks and Mahomedans; also, the washing away the superfluous salts out of any body, in chymistry.

ABOLLA. A kind of military garment worn by the Greek and Roman soldiers.

ABOMASUS (in Comparative Anatomy.) The fourth stomach of ruminating animals.

ABORIGINES. The earliest inhabitants of a country.

ABRAUM. A kind of red clay used by cabinet-makers to deepen the colour of new mahogany.

ABRIDGING (in Algebra.) The reducing a compound equation to a more simple form.

ABRIDGMENT. The bringing the contents of a book within a short compass; in Law, the shortening a count or declaration.

ABSCESS. An inflammatory tumour containing purulent matter.

ABSCISSE. The part of any diameter or axis of a curve line, cut off by a perpendicular line, called the ordinate.

ABSOLUTION. The forgiveness of sins, which the Romish Church claims to itself the power of granting; in Civil Law, a sentence whereby the party accused is declared innocent of the crime laid to his charge.

ABSORBENTS. Medicines that have the power of drying up redundant humours; also what causes acids to effervesce, as quick lime, soda, &c.

ABSORBENT VESSELS. Vessels which carry any fluid into the blood, as the inhalent arteries.

ABSORPTION (in Chymistry.) The con-

version of a gaseous fluid into a liquid or solid, on being united with some other solid.

ABSORPTION (of the earth.) A phrase applied to the swallowing up of mountains and portions of land. The earth beneath the surface, has, doubtless, many large caverns, which giving way, from time to time, the upper parts are absorbed. Ancient history records several cases; and modern history, some in China, France, and Switzerland.

ABSTERGENTS. Medicines for cleansing the body from impurities.

ABSTINENCE. An abstaining from meat diet, as practised in the Romish Church.

ABSTRACTION (in Logic.) The intellectual act of separating accidents or qualities from the subjects in which they reside, as whiteness from snow or a wall, &c.; animal from man or the brutes; in Chymistry, the process of drawing off by distillation any part of a compound, and returning it again any number of times to be redistilled.

ABUTMENTS. The extremities of any body adjoining another, as the extremities of a bridge resting on the banks or sides of a river.

ABYSS. Any deep place that is bottomless, or supposed to be so, as the deepest or unfathomable parts of the sea.

ABYSSYNIAN CATTLE. These cattle are remarkable for the size of their horns, as represented in the engraving; some of which are four feet long, seven inches in diameter near the head, and hold ten quarts.

ACACIA. A beautiful shrub, a species of which bears rose-coloured flowers.

ACADEMICS. A sect of ancient philosophers; the term is sometimes applied to the followers of Socrates and Plato.

ACADEMY. A school or college for the improvement of arts and science, so called from the grove of Academus in Athens, where Plato kept his school of philosophy. The first modern school of this name is said to have been established by Charlemagne at the instance of Alcuin, an English monk. This was followed by the Academia Secretorum Naturæ, established at Naples by Baptista Porta in 1560, and the Academia Lynceï at Rome, &c.

ACANTHUS (in Botany.) Bearsbreech, or Brank Ursine, a plant, the leaves of which resemble those of the thistle; in Architecture, an ornament representing the leaves of the ancient acanthus, and used in the capitals of the Corinthian and Composite orders.

ACCELERATION (in Mechanics.) The increase of velocity in a moving body. *Accelerated* motion is that in which the velocity is continually increasing, from the continued action of the motive power. *Uniformly accelerated* motion, is that in which the velocity increases equally in equal times. The increasing velocity with which a body falls to the earth, is an instance of accelerated motion, which is caused by the constant action of gravity. The spaces described by a falling body in a series of equal moments, or intervals of time, will be as the odd numbers 1, 3, 5, 7, 9, &c. which are the differences of the squares or whole spaces; that is, a body which falls through 16 1-12 feet in the first second, will fall through 3×16 1-12 in the second, 5×16 1-12 in the third, and so on.

ACCENT. The raising or lowering of the voice in pronouncing certain words or syllables; also the marks on the words or syllables, as the acute accent marked thus (´), the grave accent thus (`), the circumflex thus (^).

ACCEPTANCE. The signing or subscribing a bill of exchange with the word 'accepted,' and one's name, by which the acceptor obliges himself to pay the contents of the bill.

ACCESSARY, or ACCESSORY (in Law.) One guilty of an offence, not principally but by participation.

ACCIDENCE. The rules of the inflexions of nouns and conjugations of verbs arranged in grammatical order.

ACCIDENT. That which belongs accidentally, not essentially, to a thing, as sweetness, softness, &c.; in Grammar, the termination of words.

ACCIPITRES. The first order of birds, including four genera of birds of prey, who have hooked bills, strong legs, and sharp claws. These are vultures, falcons, owls, and butcher birds.

ACCLAMATION. A shouting in concert, which was practised among the Romans as a token of applause, particularly in the theatres. This consisted in the chanting or repetition of certain words in a modulated tone, so as to make a kind of harmony.

ACCOMPANIMENT. An instrumental part added to any piece of music.

ACCOUNT, or ACCOMPT. The reckoning or bill of a tradesman; the statement of a merchant's dealings and affairs drawn out in regular order in his books, and called collectively Merchant's Accounts; also the books in which these accounts are kept.

ACCOUNTANT. A person employed to compute, adjust, and range in due order, accounts in commerce.

ACCOUTREMENTS. The necessaries of a soldier, as puffs, belts, pouches, cartridge-boxes, &c.

ACETATES. A kind of salts formed by the combination of acetic acid with a salifiable base, as the acetate of potash.

ACETIC ACID. Radical vinegar, or the strongest acid of vinegar.

ACHROMATIC. Colourless; a term applied to telescopes which were first contrived by Dr. Bevis, to remedy the aberrations of colour.

ACIDIFIABLE. An epithet signifying capable of being converted into an acid by an acidifying principle; an acidifiable base or radical is any substance that is capable of uniting with such a quantity of oxygen as to become possessed of acid properties.

ACIDS and their SALTS. Acids are either solid, liquid, or gaseous. They have so strong an attraction for water, as to be generally incapable of appearing in a solid form.

The general characteristic properties of acids:

1. They are sour when applied to the tongue.

2. They change vegetable blues to a red colour.

3. They combine with metals and metallic oxides; among the latter are included earths and alkalis; with all these they form salts.

4. They combine with water in all proportions. In this state they are said to be diluted. Very many contain oxygen as one of their components: but this substance is by no means a necessary ingredient in acids; for there are several which possess the above properties which do not contain oxygen.

ACONITE, WOLFSBANE, or MONKSHOOD. A plant, the flower of which resembles the hood of a monk; it is a violent poison.

ACORN. The fruit of the oak, used to fatten hogs.

ACOUSTICS. The science which teaches the physical laws and phenomena of sounds and hearing.

ACQUITTAL. A deliverance or setting free from the suspicion of guilt, as where a person, on the verdict of a jury, is found not guilty.

ACRE. A measure of land containing four square roods, or 160 square poles of 5 yards and a half, or 4840 square yards. The French acre is equal to one and a quarter of an English acre.

ACROSTIC. A short poem whose successive lines commence with the successive letters in a word or words.

ACTION (in Physics.) The pressure or percussion of one body against another. By a law of nature, action and reaction are equal; that is, the resistance of the body moved is always equal to the force communicated to it.

ACTION (in Rhetoric.) The carriage and motion of the body, and the modulation of the speaker's voice in delivering an address.

ACTION (in Law.) The same as Lawsuit.

ACTIVE. An epithet for what communicates action or motion to another thing.

ACTUARY. The chief clerk, or person, who compiles minutes of the proceedings of a company in business.

ACUMEN. Mental sharpness, or great intellectual talent.

ACUPUNCTURATION. A method of bleeding, in use among the Chinese and Japanese, by making punctures or pricks with a gold or silver needle in any part of the body. It is chiefly employed in headaches, convulsions, lethargies, &c.

A. D. Anno Domini, in the year of our Lord.

ADAGIO. A degree quicker than grave time, in music, but with graceful and elegant execution.

ADAMANT. The hardest sort of diamond.

ADAMANTINE SPAR. A sort of earth brought from India and China, that is of the hardness of adamant.

ADDER. A large-headed poisonous serpent of Britain, and of a brown colour, the light spotted snakes being harmless. The best remedy for their bite is sweet oil.

ADDER-FLY. A name of the dragon-fly.

ADDERS-GRASS. A plant about which serpents lurk.

ADDERS-TONGUE. A plant whose seeds are produced on a spike resembling a serpent's tongue.

ADDERS-WORT. Snakeweed; a plant so named from its supposed virtue in curing the bite of serpents.

ADDITION. That rule in arithmetic which directs the connecting into a total sum several small ones. When the number has only *one* kind of figures, it is called *simple* addition; when it has two or several denominations, it is *compound*.

ADHESION. The property of certain bodies to attract other bodies to themselves, or the force by which they adhere to each other. Adhesion denotes a union to a certain point between two distinct bodies; cohesion, the union of the parts of the same body so as to form one mass.

AD INFINITUM. Indefinitely, or to infinity.

ADIPOCERE. A substance resembling spermaceti, which is formed from an animal in its progress towards decomposition.

ADIT OF A MINE. The aperture whereby it is entered, and the water and ores carried away; it is distinguished from the air-shaft, and usually made on the side of a hill.

ADJECTIVE. A part of speech in grammar, which is added to a noun to qualify its signification, as bitter, sweet, &c.

ADJUTANT. One who assists a superior officer in a regiment; the adjutant-general as-

sists the general with his counsel and personal service.

ADJUTANT. A large bird which lives on carrion.

AD LIBITUM. At pleasure.

ADMEASUREMENT (in Law.) A writ against those who usurp more than their own share, as the Admeasurement of Pasture, or the Admeasurement of Dower.

ADMINISTRATOR (in Law.) The person to whom the estate and effects of an intestate are committed, for which he is to be accountable when required.

ADMIRAL. An officer of the first rank and command in a fleet. In England, the Lord High Admiral has the government of the king's navy. The admiral of the fleet is the highest officer in the command of a fleet. There are besides two gradations of admirals, namely, the vice admiral and the rear admiral, each of which is distinguished into three classes by the colour of their flags, as white, blue, and red. In the United States, the commander of a fleet is called commodore.

ADONAI. The name of Jehovah among the Jews.

ADONIS. A beautiful youth, the favourite of Venus, who was killed by a wild boar.

ADOPTION. A practice among the Greeks and Romans, of making a person one's heir, and investing him with all the rights and privileges of a son.

AD VALOREM. According to the value.

ADVANCED GUARD, or VAN-GUARD (in the Military Art.) The first line or division of an army ranged or marching in order of battle.

ADVENT. The coming of our Saviour; also, a festival of the Episcopal church, commemorative of the Advent, which falls about a month before Christmas.

ADVERB. A part of speech in grammar, added to a verb to complete its signification, as largely, neatly, &c.

ADVERSARIA. A term among literary men for a common place book, wherein they enter whatever occurs to them in reading or conversation that is worthy of notice.

ADVERTISEMENT. Any printed publication of circumstances, either of public or private interest, particularly that inserted in the newspapers.

ADULT (in Civil Law.) Any person of lawful age.

ADULTERATION. The debasing of the coin by the mixture of impure metals; also, the debasing and corrupting any article of trade by putting improper ingredients in it, as is done very frequently by bakers, brewers, and other traders.

ADVOCATE. One who pleads for a fee in a court of law, and in England called a barrister or counsellor.

ÆDILE. A Roman magistrate who had the charge of all public buildings, particularly temples and theatres, also of all streets, highways, &c.

ÆGIS. A shield, particularly Jupiter's shield.

ÆNEID. The title of Virgil's epic poem, in which he celebrates the adventures of Æneas, as founder of Rome.

ÆOLIAN HARP. An arrangement of strings placed in a window and played upon by the wind.

ÆOLIC DIALECT. One of the five dialects of the Greek tongue.

ÆOLIPILE. A hollow metal ball with a slender pipe, used to show the convertibility of water into steam.

ÆRA, or ERA. Any date, period, or event, from which a calculation of years is made to commence. The principal æras are the vulgar, or Christian era, dated from the birth of our Saviour; the æra of the creation, dated by Usher and most chronologists 4004 years before the vulgar æra; the æra of the Olympiads, dated about 776 years before the vulgar æra; the æra of the building of Rome, according to Varro, is 753 years before Christ; the æra of Nabonassar, so dated from Nabonassar the first king of Babylon, 747 years before Christ; the æra of the Hegira, or the Mahometan æra, dated from the hegira or flight of Mahomet from Mecca, dated about 622 years after Christ, or the vulgar æra.

AEROLITES. Air stones, or meteoric stones falling from the atmosphere. These are semimetallic substances, the descent of which, though mentioned several times in history, has not been authenticated until these few years. The fact is, however, by recent and frequent observations, now put beyond all doubt. Two showers of stones are recorded by Livy and Julius Obsequens to have happened at Rome in the reign of Tullus Hostilius, and during the consulate of C. Martius and M. Torquatus; a shower of iron, in Lucania, mentioned by Pliny, and a shower of mercury by Dion. Among the moderns, Carden speaks of about 12,000 stones, one of 120 lbs. another of 60 lbs. that fell at Padua in Italy, in 1510; Gassendi of a stone of 59 lbs. on Mount Vaiser in Provence; Muschenbrock of two large stones in Ireland; St. Amand de Baudin and others of a great shower of stones in the environs of Agen, in 1790; the earl of Bristol of twelve stones at Sienna in Tuscany, in 1794; Captain Topham of a stone of 56 lbs. at Wold Cottage in Yorkshire, in 1795; Dr. Southey of a stone of 10 lbs. in Portugal, in 1796; Philosophical Magazine, of a mass of iron 70 cubic feet, in America, in 1800; and M. Fourcroy of several stones from 10 lbs. to 17 lbs. that fell near L'Aigle in Normandy, besides other instances equally well attested. The larger sort of these stones have been seen as luminous bodies to move with great velocity, descending in an oblique direction, and frequently with a loud hissing noise, resembling that of a mortar shell

when projected from a piece of ordnance. Though different from every other known terrestrial substance, yet these stones perfectly resemble each other, having the same appearance of semimetallic matter, coated on the outside with a thin black incrustation, and being in their chymical composition very similar. The stone which fell at L'Aigle in France, in 1803, was found to contain of silica 54 parts, oxide of iron 36, magnesia 9, oxide of nickel 3, sulphur 2, lime 1; their specific gravity is also nearly the same, being about 3 and a half that of common water.

AERONAUT. One who sails or floats in the air in a balloon.

AEROSTATION. The modern art of raising bodies into and navigating the air, by means of rarefied air collected within an envelope, commonly called a balloon (see BALLOON.)

AEROSTATION, HISTORY OF. This art is founded on the principle, that any body which is specifically lighter than the atmospheric air will be buoyed up by it and ascend; a principle which had doubtless long been known, although the application of it to any practical purpose is altogether a modern invention. It is true that we read of the attempt which was made by Dædalus and his son Icarus to pass through the air by means of artificial wings, in which the former is said to have succeeded, but this is commonly reckoned among the fables of the ancients. Dr. Black, in his lectures in 1767 and 1768, was the first who, after Mr. Cavendish's discovery of the specific gravity of inflammable air, threw out the suggestion that if a bladder, sufficiently light and thin, were filled with air, it would form a mass lighter than the same bulk of atmospheric air, and rise in it. But want of leisure prevented him from trying the experiment, the honour of which belonged to Mr. Cavallo, who communicated the result to the Royal Society, on the 20th of June in that year. After having made several unsuccessful experiments with bladders and skins, he succeeded at length in making soap balls, which being inflated with inflammable air, by dipping the end of a small glass tube, connected with a bladder containing the air, into a thick solution of soap, and gently compressing the bladder, ascended rapidly. These were the first sort of inflammable air balloons that were made. But while philosophers in Britain were thus engaged in experiments on this subject, two brothers, in France, Stephen and John Montgolfier, paper manufacturers of Annonay, had made rapid advances towards carrying the project into execution. Their idea was to form an artificial cloud by enclosing smoke in a fine silk bag; and having applied burning paper to an aperture at the bottom, the air thus became rarefied, and the bag ascended to the height of 70 feet. This experiment was made at Avignon, about the middle of the year 1782, and was followed by other experiments, all tending to prove the practicability of the scheme. An immense bag of linen, lined with paper, and containing upwards of 23,000 cubic feet, was found to have a power of lifting about 500 pounds, including its own weight. Burning chopped straw and wool under the aperture of the machine caused it to swell and ascend in the space of ten minutes to the height of 6000 feet: when exhausted, it fell to the ground at the distance of some thousand feet from the place where it ascended. In an experiment tried before the Academy of Sciences, a large balloon was made to lift eight persons from the ground, who would have been carried away had the machine not been kept down with force. On the repetition of the experiment before the king at Versailles, with a balloon near 60 feet high and 43 in diameter, a sheep, a cock, and a duck, the first animals that ever ascended in a balloon, were carried up about 1440 feet, and after remaining in the air about eight minutes, came to the ground in perfect safety, at the distance of 10,200 feet from the place of ascent. Emboldened by this experiment, M. Pilatre de Rozier offered himself to be the first aerial adventurer. A new machine was accordingly prepared, with a gallery and grate, &c. to enable the person ascending to supply the fire with fuel, and thus keep up the machine as long as he pleased. On the 15th of October, 1783, M. Pilatre took his seat in the gallery, and, the machine being inflated, he rose to the height of 84 feet, and, after keeping it afloat about four minutes and a half, he gently descended: he then rose again to the height of 210 feet, and the third time to 262. In the descent, a gust of wind having blown the machine over some large trees, M. Pilatre extricated himself by throwing straw and wool on the fire, which raised him at once to a sufficient height, and in this manner he found himself able to ascend or descend to a certain height at pleasure. Some time after, he ascended with M. Giroud de Vilette to the height of 330 feet, hovering over Paris at least nine minutes, in sight of all the inhabitants, and the machine keeping all the while a steady position. In 1783, he undertook a third aerial voyage with the Marquis d'Arlandes, and in the space of twenty-five minutes went about five miles. In this voyage they met with several different currents of air, the effect of which was to give a very sensible shock to the machine. They were also in danger of having the machine burnt altogether, if the fire had not been quickly extinguished by means of a sponge. After this period aerostatic machines were elevated by inflammable air enclosed, instead of fire, with which Messrs. Roberts and Charles made the first experiment. In this case the bag was composed of lutestring, varnished over with a solution of elastic gum, called caoutchouc, and was about 13 English feet in diameter. After

being filled with considerable difficulty, it was found to be 35 pounds lighter than an equal bulk of common air. With this they ascended, and in three quarters of an hour traversed fifteen miles. Their sudden descent was occasioned by a rupture which happened to the machine when it was at its greatest height. On a subsequent day the same gentlemen made an ascent in a balloon filled with inflammable air. This machine was formed of gores of silk, covered with a varnish of caoutchouc, of a spherical figure, and measuring 27 feet 6 inches in diameter. A net was spread over the upper hemisphere, and fastened to a hoop which passed round the middle of the balloon. To this a sort of car was suspended, a few feet below the lower part of the balloon; and in order to prevent the bursting of the machine, a valve was placed in it, by opening of which some of the inflammable air might be allowed to escape. In the car, which was of basket-work, and covered with linen, the two adventurers took their seats in the afternoon of the 1st of December, 1783. At the time the balloon rose the barometer was at 30° 18′, and it continued rising until the barometer fell to 27°, from which they calculated that they had ascended 600 yards. By throwing out ballast occasionally they found it practicable to keep nearly the same distance from the earth during the rest of their voyage, the mercury fluctuating between 27° and 27° 65′, and the thermometer between 53° and 57° the whole time. They continued in the air an hour and three quarters, and alighted at the distance of 27 miles from Paris, having suffered no inconvenience, nor experienced any of the contrary currents described by the Marquis d'Arlandes. M. Roberts having alighted, and much of the inflammable gas still remaining, M. Charles determined on taking another voyage. No sooner therefore was the balloon thus lightened of 130 pounds of its weight, than it arose with immense velocity, and in 20 minutes was 9000 feet above the earth, and out of sight of all terrestrial objects. The globe, which had become flaccid, now began to swell, and when M. Charles drew the valve, to prevent the balloon from bursting, the inflammable gas, which was much warmer than the external air, for a time diffused a warmth around, but afterwards, a considerable change was observable in the temperature. His fingers were benumbed with cold, which also occasioned a pain in his right ear and jaw, but the beauty of the prospect compensated for these inconveniences. The sun, which had been set on his ascent, became again visible for a short time, in consequence of the height which he had reached. He saw for a few seconds vapours rising from the valleys and rivers. The clouds seemed to rise from the earth, and collect one upon the other; only their colour was gray and obscure from the dimness of the light. By the light of the moon he perceived that the machine was turning round with him, and that there were contrary currents which brought him back again: he also observed with surprise, that the wind caused his banners to point upwards, although he was neither rising nor descending, but moving horizontally. On alighting in a field about 3 miles distant from the place where he set out, he calculated that he had ascended, at this time, not less than 10,500 feet. Hitherto all experiments of this kind had been unattended with any evil consequences; but an attempt which was made to put a small aerostatic machine with rarefied air under an inflammable air balloon, proved fatal to the adventurers, M. Pilatre de Rozier and M. Romaine. Their inflammable air balloon was about 37 feet in diameter, and the power of the rarefied air one was equivalent to about 60 pounds. They were not long in the air when the inflammable air balloon was seen to swell considerably, and the æronauts were observed, by means of telescopes, to be very anxious to descend, and busied in pulling the valve and giving every possible facility of escape to the inflammable air, but, in spite of all their endeavours, the balloon took fire without any explosion, and the unfortunate gentlemen were precipitated to the earth, at the height of about three quarters of a mile. M. Pilatre seemed to have been dead before he came to the ground; but M. Romaine was found to be alive, although he expired immediately after. The ill success of this experiment, which had been made for the purpose of diminishing the expense of inflating the machine with gas, did not interrupt the progress of aerostation. Aerial voyages continued to be made on the old scheme. The first trial in England was made by Vincent Lunardi, an Italian, on the 15th of September, 1784. His balloon, the diameter of which was 33 feet, was made of oiled silk, painted in alternate stripes of blue and red. From a net, which went over about two thirds of the balloon, descended 45 cords to a hoop hanging below it, and to which the gallery was attached. Instead of a valve, the aperture at the neck of the balloon, which was in the shape of a pear, served for admitting or letting out the inflammable air. The air for filling the balloon was produced from zinc, by means of diluted vitriolic acid. M. Lunardi ascended from the Artillery Ground, at two o'clock, having with him a dog, a cat, and a pigeon. He was obliged to throw out some of his ballast in order to clear the houses, when he rose to a considerable height, proceeding first N. W. by W. and then nearly N. About half after three he descended very near the earth, and landed the cat, which was half dead with the cold; he then reascended by throwing out some more of his ballast, and ten minutes past four he alighted in a meadow near Ware in Hertfordshire. His thermometer stood in the course of his voyage as low as 29°. and he observed that the drops of water collected round the balloon were frozen. The second aerial voyage in England was perform-

ed by Mr. Blanchard, on the 16th of October, in the same year, in which he was accompanied by Mr. Sheldon, professor of anatomy at the Royal Academy, the first Englishman that adventured in such an excursion. They ascended a few minutes past 12 o'clock, and after proceeding about 14 miles beyond Chelsea, Mr. Blanchard landed Mr. Sheldon, reascended alone, and finally landed near Rumsey, in Hampshire, about 75 miles from London, which was at the rate of about 20 miles an hour. Mr. Blanchard ascended so high that he felt a difficulty in breathing; and a pigeon, which flew from the boat, laboured for some time to sustain itself, but was at length compelled to return and rest on the boat.

Aerial voyages now became frequent in England and elsewhere, and afforded nothing worthy of notice before the ascent of M. Garnerin, in 1802, who undertook the singular and desperate experiment of descending by means of a parachute. (See PARACHUTE.) In this descent it was observed that the parachute, with the appendage of cords and the basket in which M. Garnerin had seated himself, vibrated like the pendulum of a clock, and at times the vibrations were so violent, that more than once the parachute and the basket seemed to be on the same level, or quite horizontal, which presented a terrific spectacle of danger to the spectator. They diminished, however, as M. Garnerin approached the earth, and he was landed in safety, though strongly affected with the violent shocks that his frame had experienced. Various excursions have since been made by Mr. Saddler, Mr. Green, and others.

AETITES, or EAGLE-STONE. A stone so called, because it was originally found in Eagles' nests. It is a sort of ore of a kidney shape, imbedded in iron-shot clay.

AFFECTUOSO. In an affecting style; a term in music books at the beginning of a movement.

AFFIDAVIT. An oath in writing, taken before some person who is legally authorized to administer the same.

AFFINITY (in Civil Law.) The relationship in which each of the parties married stand to the kindred of the other.

AFFINITY (in Chymistry.) The attractive power observable in the different parts of bodies, by which they combine; as the affinity of sulphuric acid for potash and lime.

AFFIRMATION (in Law.) The confirming the sentence of an inferior court: also, the simple declaration of a Quaker to the truth of a matter, which is taken in the place of an oath.

AFFRAY. A skirmish or fighting between two or more.

AGARIC. An excrescence, or sort of mushroom, which grows on trees.

AGATE. A precious stone, first found in Sicily; it is a mineral composed of various substances, as chalcedony, cornelian, jasper, &c.; also a stone of the agate kind engraven by art, which constitutes among antiquarians a species of gems.

AGE. A certain period or limit of time, marked for the convenience of chronology and history by some remarkable events. Chronologers commonly reckon seven such ages, namely, 1. From the creation to the deluge. 2. From the deluge to the birth of Abraham. 3. From the birth of Abraham to the departure of the Israelites out of Egypt. 4. From the departure of the Israelites to the building of the temple by Solomon. 5. From the laying the foundation of the temple to the reign of Cyrus in Babylon. 6. From the reign of Cyrus to the coming of Christ. 7. Since the birth of our Saviour. Chronologers are generally agreed as to the dividing the time from the creation into seven ages, but they differ materially as to the time contained in these periods. The poets distinguished the period of the world into four ages; namely, into the golden age, or the age of simplicity and happiness; the silver age, which was inferior to the golden age in enjoyments; in this age man began to till the ground for their sustenance. In the brazen age strifes and contentions began, which, in the iron, were carried to the utmost extent, and accompanied with every evil that afflicts mankind. It is most probable that this notion of the four ages was taken from the history of the golden image, seen by Nebuchadnezzar in a dream, mentioned in Daniel, by which the first monarchy was denoted the golden one, the second silver, the third brazen, and the fourth iron. The Greeks, who derived their mythology from the Egyptians, doubtless gathered this idea from the same source, and wrought it into a fable by the ingenuity of their poets.

AGE. A term in law for those special times which enable men and women to do that which they could not do before; thus, a man may take the oath of allegiance at twelve years of age, is at the age of discretion at fourteen to choose his guardian and contract a marriage, and is at full age at twenty-one. A woman at the age of nine is dowable, at twelve may confirm her consent to marriage, at fourteen may receive her land into her own hands, and at twenty-one may alienate her lands and tenements.

AGENT (in Law.) A person empowered to act for another.

AGENT (in Physics.) Any thing having the power to act on another object, as cold or heat.

AGGREGATE. An order of plants in the Linnæan system, having compound flowers with separate anthers.

AGGREGATION (in Chymistry.) The adhesion of parts of the same kind; as pieces of sulphur united by fusion form an aggregate.

AGIO. A term used chiefly in Holland and Venice, to denote the difference between the bank money and the current money, or cash;

as when a merchant stipulates to receive for his goods 100 livres bank money, or 105 cash, or current money, the agio is said to be 5 per cent.

AGRICULTURE. The art of tilling the land according to certain rules of experience and science.

AGRICULTURE, History of. As the ground was, by divine appointment, to furnish subsistence for man, and after his fall he was doomed to procure it by labour, husbandry, or the practical part of agriculture, was of necessity the first and most important occupation of the descendants of Adam; wherefore we learn from Scripture, that his two sons, Abel and Cain, were both employed in this manner, the former being a keeper of sheep, and the latter a tiller of the ground. With what implements this work of tillage was carried on, and what degree of art was employed in producing the fruits of the earth, is left to conjecture; but writers on those early periods are generally agreed that the antediluvians were in possession of many arts and inventions which were in process of time lost, or at least but imperfectly retained among the different nations that were scattered abroad after the confusion of tongues. Agriculture was one of the arts which Noah and his posterity retained; for we find that he cultivated the vine. Those of the line of Shem appear to have followed the breeding and feeding of cattle; but those of the line of Ham, who took possession of Egypt, applied themselves to the tilling of the ground, and with so much ingenuity, industry, and success, that, owing to the inundations of the Nile, and the consequent fertility of the soil, Egypt was enabled in the time of Abraham, and still more so in the time of Joseph, to supply its neighbours with corn during a period of famine. Nor were the inhabitants backward in assisting the liberality of nature: they busied themselves in embanking, irrigation, and draining, in order to derive all the benefits which the benignant river was capable of affording them. These works are said to have been carried on with particular spirit under the auspices of Sesostris, 1800 years before the Christian era. So sensible were the Egyptians of the blessings which agriculture afforded, that, in the blindness of their zeal, they ascribed the invention of the art to their god Osiris, and the culture of barley and wheat to their goddess Isis.

The Pelasgi, or aboriginal inhabitants of Greece, were among the number of those who lost all the primeval arts, and fed upon acorns and wild fruits, until they were led by the Egyptians, with whom they had an early communication, to the cultivation of the ground. Like them, too, they placed their benefactress Ceres, to whom they ascribed the introduction of corn, among the number of their deities; a goddess whom authors agree was no other than the Egyptian Isis. In the time of Homer, agriculture was in such esteem, that King Laertes laid aside his royal dignity, that he might cultivate a few fields. Hesiod, the contemporary of this author, has devoted a whole poem to the labours of the field in the different seasons of the year. Of other writings, among the Greeks, on agriculture, little remains, except a treatise by Xenophon on rural affairs, and scattered notices on the subject in the works of Aristotle and Theophrastus; but we learn from Varro, that there were in his time not less than fifty Greek authors to be consulted on agricultural matter.

The Jews, as Scripture informs us, applied themselves, when they came into the land of Canaan, to the cultivation of the soil, having each their territory allotted to them. We may also infer, from the frequent allusions to this subject in different parts of the Old Testament, that husbandry formed their principal occupation. The laws of Moses have, many of them, for their object, the regulation of their flocks, their herds, and their fields. David cultivated his own land, having officers to take charge of his flocks, his herds, his camels, his asses, and his warehouses of wine and oil, &c. Elisha was in the field with twelve yoke of oxen when Elijah found him. Besides the frequent mention of husbandry business in different parts of the sacred writings, as the digging of wells, the planting of vineyards, the leasing, gathering in, thrashing, sifting, and winnowing of corn, with a number of other things of the like kind.

That the Carthaginians did not neglect agriculture, is evident from this, that they had writers on the subject, of whom a famous general, Mago, was one, who is quoted by Varro. He wrote no less than twenty-eight books. It is probable that, under the auspices of these people, agriculture flourished in Sicily, which was afterwards the granary of Rome.

No subject engaged the attention of the Romans more than agriculture, theoretically as well as practically. They divided their time between war and husbandry; their greatest men, in the early ages of the republic, being employed alternately in the one and the other. Cincinnatus was taken from the plough to fill the office of dictator; and Regulus besought the senate that he might return to his little farm for a short time, to prevent it from being ruined. Pliny observes, that the Romans ploughed their fields with the same diligence that they pitched their tents, and sowed their corn with as much care as they raised their armies. When riches had introduced luxury, and artificial manners and habits, the labours of the field were performed by their slaves; but there remained many among them of the higher orders who directed their personal attention to the subject. The writings of Cato the Censor, Varro, Pliny, Columella, and Palladius, as well as those of the poet Virgil, abound with practical and useful observations on the whole round of farming busi-

ness. At the same time they all agree in lamenting that agriculture was not pursued with the same zeal as formerly. The great among the Romans had town houses as well as villas, and living more in the former than in the latter, the management of their farms was left to their bailiffs or servants. The ox, which was the principal beast of burden among the Egyptians, the Jews, and Grecians, was also highly esteemed among the Romans. Many directions for the breeding, breaking, feeding, and working this animal, are to be found in the writers abovementioned; as also in regard to the management of bees, which were highly prized. As to the implements of husbandry used among the Romans, the description of them not being illustrated by any representation, it is not easy to speak precisely of them; but it is clear that they used the plough with and without wheels, with and without boards, with and without coulters, also with shares of different constructions. A reaping machine is likewise spoken of both by Pliny and Palladius, which was driven by an ox; but for the most part they cut their corn with the hand, either with the hook close to the ground, or only the ears with a curved stick and a saw attached to it, or otherwise they cut the stalks in the middle, leaving the stubble to be afterwards mowed. They thrashed either with a machine composed of rollers, or with rods or flails, or they trod it out with their feet. Haymaking was performed among the Romans much in the same manner as at present. Harrowing the corn was particularly recommended by the Roman writers; who also speak of hoeing, weeding, watering, draining, and fallowing the ground, which was universal among them.

Agriculture shared the fate of all the other arts on the decline of the empire: from the time of Pliny to the fifteenth century, there is no work extant on the subject, except the Geoponics, which was published by Constantine Pogonatus, and probably collected by the emperor himself. Crescenzio, a writer of Bologna, was the first who called the attention of his countrymen to this subject after this long interval. His little work, which was collected from the Roman writers, was followed by some other Italian productions: but probably nothing contributed more to give an importance to agricultural pursuits than the introduction of the feudal system, which gave to every man a rank and distinction according to the quantity of land he either possessed or occupied; for not only the great lord, who was the owner of the soil, or reaped the fruits of it, but also his tenants, who cultivated it, were invested with political privileges, that were enjoyed by no other members of the community; and although the feudal burdens and restraints have ceased, yet the privileges and advantages attached to the possession of landed property still give it a paramount advantage. Hence it is, that since the revival of the arts, the science of agriculture has been zealously cultivated by the higher orders. The writers likewise on this subject have within the last century been more numerous than at any former period; and every effort has been made by experiments, inventions, and improvements, to render the land productive. Nor have these efforts been without effect, for, notwithstanding the immense increase in the population, there has been no such scarcity as we read of in former times.

AGUE. An intermitting fever, with hot and cold fits alternately.

AGUTI. An American animal, like a guinea pig, having the characters of the rat kind, and the hair and voice of the hog. When provoked, it raises all the hair of its back upright, and strikes the earth with its hinder feet.

AID-DE-CAMP. An officer that always attends on each of the generals in his camp, to receive and carry orders.

AILANTHUS. A Chinese tree, called the tree of heaven, on account of its lofty growth; it rises with a straight trunk forty or fifty feet high.

AIR (in Natural Philosophy.) That fluid, transparent substance, which surrounds our globe, reaching to a considerable height above its surface, perhaps 45 miles; and this ocean of air is the great laboratory in which most of the actions of life go on; and on the composition of which they depend. Though invisible, except in large masses, without smell or taste, yet it is a substance possessing all the principal attributes of matter; it is impenetrable, ponderable, compressible, dilatable, perfectly elastic, and its particles are operated on like those of other bodies, by chemical operations. It is indispensable to the life of all organic beings; animals respire it incessantly, and decompose it; a part of its oxygen is transformed into carbonic acid, and this combination produces caloric, which contributes principally to the preservation of animal heat. Vegetables imbibe the carbon which the carbonic acid, diffused through the air, contains. The air is the agent of combustion; the particles of bodies combine with its oxygen and evolve heat and light. Finally, the air is the principal medium of sound.

AIR (in Music.) Any melody whose passages lie within the province of vocal expres-

sion, which when sung or played, form the connected sounds we call tune.

AIR-GUN. An instrument by which air, after it is condensed into an enclosed cavity, may be let out in sufficient quantity to discharge a bullet through the barrel of the gun, with great force, without causing any explosion. Air may be condensed into ten or fifty times smaller space; its elastic force being thus rendered equal to gunpowder, which itself is merely concentrated air set at liberty by heat. Steam confined in the like manner is a less convenient variety of the same power.

AIR-JACKET. A jacket made of leather, in which are several bags or bladders of the same material, communicating with each other, and fitted to receive air by means of a brass tube. This jacket is used by persons who cannot swim, to support them in the water.

AIR-PLANT. A singular plant, which grows suspended from the ceiling of a room, and derives its nutriment from the air. The first plant of this kind which has blown in England is to be seen at Claremont at the seat of Prince Leopold.

AIR-PUMP. A machine which operates on the air just as a common pump operates on water; and by means of which a considerable portion of the air under a glass receiver may be extracted, and a number of amusing and instructive experiments performed, by which the uses of atmospheric air are discovered, and many phenomena shown to arise from its action and re-action.

AIR-SHAFTS (in Mining.) Holes or shafts set down from the open air to discharge the foul vapours.

AIR-VESSELS. Spiral ducts or canals in the leaves and other parts of plants, which are supposed to supply them with air, after the manner of lungs in animals.

ALABASTER. A well known sulphate of lime, forming a soft, granular, imperfectly transparent, marble; used for ornaments in houses, and by statuaries.

ALBATROSS. A large and voracious waterfowl, which inhabits many countries between the tropics.

ALBINOS. The white Moors, so called by the Portuguese; they have flaxen hair, blue rolling eyes, and a pale livid whiteness.

ALBUMEN. A white or transparent viscous fluid, without taste or smell, which is the substance of the nerves; the serous part of the blood; and the white of eggs and of milk.

ALBURNUM. The soft white substance between the inner bark and the wood of shrubs and trees.

ALCHYMY. The original name of chymistry; but owing to the alchemists pretending to transmute base into precious metals, the name of their science fell into disrepute.

ALCOHOL, or Spirit. A result of chymical decomposition, previously to which the spirit was masked by combinations. In a vegetable fluid an excitement is caused by introducing a fermenting substance, and carbonic acid gas, or fixed air, is separated from the mass, from which, if excited by heat, the lighter gas, called hydrogen, mingled with carbon, rises, and being recondensed by passing through a worm placed in cold water, it falls down as spirit or alcohol. The object is to produce the greatest quantity of fixed hydrogen with the smallest quantity of carbon. Its discovery has been a scourge to the world.

ALCOR. A small star, adjoining the bright one in the middle of the tail of Ursa Major.

ALCORAN, or the Koran. The name of the volume containing the doctrines and precepts of Mahomet.

ALDEBARAN, or The Bull's Eye. A star of the first magnitude in the constellation Taurus.

ALDER. A tree which thrives particularly in moist places. The principal sorts of alder are the round leaved, or common alder, the long-leaved, and the dwarf alder.

ALDERMAN. A superior judge, who sat with the bishop in the county courts in the time of the Saxons. The alderman is now a magistrate next to the mayor in a city or borough.

ALE. A pleasant common liquor, brewed by pouring hot water upon malt; this is strained off, and again boiled with hops; which liquor is then fermented with yest, and stowed in vats or casks. Porter is made from high-dried malt.

A-LEE. A sea term, signifying to the lee-side.

ALEMBIC. A vessel formerly used for distilling; in the place of which retorts are now mostly in use.

ALEXANDRINE. A verse in modern poetry consisting of ten, twelve, or thirteen syllables.

ALGÆ. A natural order of plants in the Linnæan system, containing flags, seaweeds, and other marine plants, whose root, leaf, and stem are one.

ALGEBRA. The science of computing abstract quantities by means of symbols or signs. It is called Specious Arithmetic by Vieta, and Universal Arithmetic by Newton. The first letters of the alphabet, a, b, c, d, &c. are made to represent known quantities; and the last letters, x, y, z, to represent those that are unknown. The operations with these letters are performed by means of the characters ($+$) for addition, ($-$) for subtraction, ($\times$) for multiplication, ($\div$) for division, ($=$) for equality.

ALGEBRA, HISTORY OF. The term algebra is of Arabic original, and is derived by some from algebar almocabaleh, signifying restitution and comparison, or resolution, which properly expresses the nature of the thing; others have derived it from Geber, a celebrated mathematician. This science is not of very ancient date, although it is not possible to fix the exact period of its commencement. The earliest treatise on this subject now extant is that of Diophantus, a Greek author of Alexandria, who flourished about the year 350, and wrote thirteen books of Arithmeticorum, of which six only are preserved. These books do not contain the elementary parts of algebra, only some difficult problems respecting square and cube numbers, and the properties of numbers in general, to which the writings of the more ancient authors, as Euclid, Archimedes, and Apollonius, might naturally be supposed to have given birth. Whether the Arabians took their hints from this and similar works among the Greeks, and drew out the science of Algebra for themselves, or whether they more immediately derived it, as they did their notation, from the Hindoos, is a matter of doubt. It is certain, however, that the science was first transmitted by the Arabians or Saracens to Europe, about the year 1100; and that after its introduction the Italians took the lead in its cultivation. Lucas Paciolus, or Lucas de Burgo, was one of the first who wrote on the subject, and has left several treatises, published between the years 1470 and 1509. In his principal work, entitled Summa Arithmeticæ et Geometriæ Proportionumque Proportionalitatum, published first in 1494, he mentions several writers, and particularly Leonardus Pisanus, otherwise called Bonacci, an Italian merchant, who, in the thirteenth century, used to trade to the seaports, and thence introduced the science of algebra into Italy. After Lucas de Burgo, many other Italian writers took up the subject, and treated it more at large, as Scipio Ferreus, who found out a rule for resolving one case of a compound cubic equation; but more especially Hieronymus Cardan, who, in ten books published in 1539-45, has given the whole doctrine of cubic equations; for part of which, however, he was indebted to Nicholas Tartalea, or Tartaglea, of Brescia, a contemporary of Cardan's, who published a book on cubic equations, entitled, Quesite Invenzioni diverse, which appeared in 1596. Cardan often used the literal notation of a, b, c, d, &c., but Tartalea made no alteration in the forms of expression used by Lucas de Burgo, calling the first power of the unknown quantity in his language cosa, the second censa, the third cubo, &c. writing the names of all the operations in words at length, without using any contractions, except the initial ℞, for root, or radicality. About this time the science of algebra also attracted the attention of the Germans, among whom we find the writers Stifelius and Scheubelius. Stifelius, in his Arithmetica Integra, published at Nuremberg in 1544, introduced the characters $+$, $-$, $\sqrt{}$, for plus, minus, and radix, or root, as he called it; also the initials 4, 3, 2, for the power 1, 2, 3, &c. and the numeral exponents 0, 1, 2, 3, &c. which he called by the name of exponens exponent. He likewise uses the literal notation, A, B, C, D, &c. for the unknown or general quantities. John Scheubelius, who wrote about the same time as Cardan and Stifelius, treats largely on surds, and gives a general rule for extracting the root of any binomial or residual, $a \pm b$, where one or both parts are surds. These writers were succeeded by Robert Recorde, a mathematician and physician of Wales, who in his works, in 1552 and 1557, on Arithmetic, showed that the science of algebra had not been overlooked in England. He first gave rules for the extracting of the roots of compound algebraic quantities, and made use of the terms binomial and residual, and introduced the sign of equality, or $=$. Peletarius, a French algebraist, in his work, which appeared at Paris in 1558, made many improvements on those parts of algebra which had already been treated of. He was followed by Peter Ramus, who published his Arithmetic and Algebra in 1560; Raphael Bombelli, whose Algebra appeared at Bologna in 1579; and Simon Steven, of Bruges, who published his Arithmetic in 1585, and his Algebra a little after. This latter invented a new character for the unknown quantity, namely, a small circle (○), within which he placed the nume-

ral exponent of the power; and also denoted roots, as well as powers, by numeral exponents. The algebraical works of Vieta, the next most distinguished algebraist, appeared about the year 1600, and contain many improvements in the methods of working algebraical questions. He uses the vowels, A, E, I, O, Y, for the unknown quantities, and the consonants, B, C, D, &c. for the known quantities; and introduced many terms which are in present use, as coefficient, affirmative and negative, pure and adfected, &c.: also the line, or vinculum, over compound quantities ($\overline{A+B}$). Albert Girard, an ingenious Flemish mathematician, was the first person who, in his Invention Nouvelle en l'Algebre, &c. printed in 1629, explained the general doctrine of the formation of the coefficients of the powers from the sums of their roots, and their products. He also first understood the use of negative roots, in the solution of geometrical problems, and first spoke of imaginary roots, &c. The celebrated Thomas Harriot, whose work on this subject appeared in 1631, introduced the uniform use of the letters *a*, *b*, *c*, &c.; that is, the vowels *a*, *e*, and *o*, for the unknown quantities, and the consonants, *b*, *c*, *d*, &c. for the known quantities; these he joins together like the letters of a word, to represent the multiplication or product of any number of these literal quantities, and prefixing the numeral coefficient, as is usual at present, except being separated by a point, thus 5.bbc. For a root he sets the index of the root after the mark $\surd$, as $\surd 3$ for the cube root, and introduces the characters $>$ and $<$, for greater and less; and in the reduction of equations he arranged the operations in separate steps or lines, setting the explanations in the margin, on the left hand, for each line. In this manner he brought algebra nearly to the form which it now bears, and added also much information on the subject of equations. Oughtred, in his Clavis, which was first published in 1631, set down the decimals without their denominator, separating them thus 21(56. In algebraic multiplications he either joins the letters which represent the factors, or connects them with the sign of multiplication $\times$, which is the first introduction of this character. He also seems to have first used points to denote proportion, as 7 . 9 : : 28 . 36; and for continued proportion has the mark $\div\!\!\div$. In his work we likewise meet with the first instance of applying algebra to geometry, so as to investigate new geometrical properties: which latter subject is treated at large by Descartes, in his work on Geometry, published in 1637, and also by several other subsequent writers. Wallis, in his Arithmetica Infinitorum, first led the way to infinite series, particularly to the expression of the quadrature of the circle by an infinite series. He also substituted the fractional exponents in the place of radical signs, which in many instances facilitate the operations. Huygens, Barrow, and other mathematicians, employed the algebraical calculus in resolving many problems which had hitherto baffled mathematicians. Sir Isaac Newton, in his Arithmetica Universalis, made many improvements in analytics, which subject, as well as the theory of infinite series, was further developed by Halley, Bernoulli, Taylor, Maclaurin, Nicole, Stirling, De Moivre, Clairaut, Lambert, Waring, Euler, &c.

ALGOL. A fixed star of the second magnitude in the constellation of Perciis or Medusa's Head.

ALGORITHM. An Arabic word, frequently used to denote the practical rules of algebra.

ALIAS (in Law.) A word signifying, literally, otherwise; and employed in describing the defendant, who has assumed other names besides his real one.

ALIBI (in Law.) A term signifying, literally, elsewhere; and used by the defendant in a criminal prosecution, when he wishes to prove his innocence, by showing that he was in another place, or elsewhere, when the act was committed.

ALICONDA. An Ethiopian tree, from the bark of which flax is spun.

ALICONDA-TREE. A native of Congo, on the coast of Africa, and supposed to be the largest tree that grows. It bears a melon-like fruit, which affords pulpy nutritious food, and the bark yields a coarse thread, with which the Africans weave a kind of cloth.

ALIEN (in Law.) One born in a foreign country, out of the allegiance of the government under which he is residing. An alien is incapable of inheriting lands until he is naturalized by a legislative act. He has likewise no right to vote at elections, or to enjoy any office, nor to be returned on any jury, unless where an alien is to be tried.

ALIMONY (in the Civil Law.) The allowance made to a married woman upon her separation from her husband.

ALIQUANT PARTS. Such numbers in arithmetic as will not divide or measure a whole number exactly, as 7, which is the aliquant part of 16.

ALIQUOT PARTS. Such part of a number as will divide or measure a whole number exactly, as 2 the aliquot part of 4, 3 of 9, and 4 of 16.

ALKALI, or Kali, sometimes called natron, or nitre, a very important salt in soap and glass-making. Potash and soda are called fixed alkalis, and ammonia, volatile alkali.

ALLAH. The Arabian name of God.

ALLEGIANCE. The duty of subjection to law, under which subjects lay themselves in establishing their own protection under the law.

ALLEGORY. A series or chain of metaphors continued through a whole discourse; thus the prophets represent the Jews under the

allegory of a vine, planted, cultivated, and watered by the hand of God.

ALLEGRO. An Italian word used in music, to denote that the part is to be played in a brisk and sprightly manner.

ALLELUIAH. The Hebrew for Praise the Lord.

ALLIGATION. A rule in arithmetic, teaching how to compound several ingredients for any design proposed. It is either medial or alternate. Alligation medial is the method of finding the rate or quality of the composition from having the rates or qualities of the several ingredients, as to find the value of brandy per gallon, which is composed of 10 gallons at 24*s*. per gallon, 12 at 30*s*. per gallon, &c. Alligation alternate is the method of finding the quantities of ingredients necessary to form a compound of a given rate, as to find how gold of various degrees of fineness, that is of 19, 21, and 23 carats fine, &c. may be mixed together, so that the mixture may be 20 carats fine. Questions of this kind are better solved by algebra.

ALLIGATOR. An amphibious animal, of the lizard species, which grows to the length of 18 feet, and abounds in the torrid zone, in the fresh and salt parts of rivers, on the banks of which it watches for its prey; seizing upon animals, and sometimes upon men.

ALLITERATION. Employing a succession of words commencing with the same letter.

ALLODIAL. An epithet for lands held without any acknowledgment to a lord or superior, in opposition to feudal lands. Allodial lands are exempt from rent or services.

ALLOY, or ALLAY. A proportion of any baser metal mixed with one that is finer; thus the gold coin has an alloy of silver and copper, as silver has of copper alone: the proportion in the former case for standard gold is 2 carats of alloy in a pound weight, or 22 carats fine; in the latter case, for the silver, there are 18 dwts. of alloy in 11 oz. 2 dwts. fine.

ALL-SAINTS. A festival observed in the Episcopal church on the first day of November, in commemoration of all the saints.

ALLSPICE, or the PIMENTO TREE. A beautiful tree of Mexico and the West Indies, the fruit of which is highly aromatic. The tree is about 30 feet in height, and two in circumference.

ALLUVION. A gradual increase of land washed to the shore by inundations. Alluvial formations are also to be found in valleys and plains, by the deposite of gravel, loam, clay, or other earths, washed down from the mountains.

ALMAGEST. The name of a celebrated book on Astronomy, composed by Ptolemy.

ALMA MATER. The name given to the universities of Oxford and Cambridge by their several members, who have passed their degrees in each of these universities.

ALMANAC. A calendar or table containing a list of the months and days, with an account of the rising and setting of the sun and moon, and other incidental matters. The Nautical Almanac, or Astronomical Ephemeris, is a kind of national almanac, begun in 1767, under the direction and by the advice of the astronomer royal, the late Rev. Dr. Maskelyne. Besides most things essential to general use, which are found in other almanacs, it contains many new and important matters, particularly the distance of the moon from the sun and fixed stars, computed to the meridian of Greenwich, for every three hours of time, for the purpose of computing the longitude at sea. This almanac is generally computed a few years forward, for the convenience of ships going out upon long voyages.

ALMOND. The fruit of the almond tree, which is a nut, and is either sweet or bitter. It contains so much oil, that it yields one third of its weight.

ALMOND TREE. A tall tree, resembling the peach tree, which flourishes in the eastern countries, and the southern parts of Europe. It is one of the first trees that bloom.

ALMONER. An officer appointed to distribute alms to the poor.

ALOE. A tree which originally came from India, is remarkable for a bitter juice, called aloes, which is extracted from its leaves, and is very useful in medicine. The aloe soccotrina is a European species much cultivated in Spain.

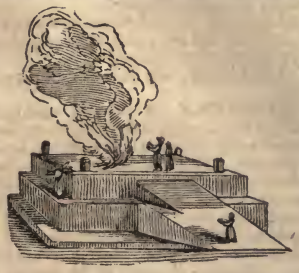
ALOE, AMERICAN. A plant which, when vigorous, rises upwards of twenty feet high, and branches out on every side, forming a kind of pyramid, of greenish yellow flowers, erect, and in thick clusters at every joint.

ALPHA. The first letter in the Greek alphabet, which, with the second letter, beta, forms the word alphabet.

ALPHABET. A series of the several letters in a language, which vary in number in different languages. The Hebrew contains 22 letters, as also the Chaldee, Samaritan, Syriac, Persian, Ethiopic, Saracen, &c.; but the Irish, which is the same as the Pelasgian, or Scythian, still retains only 17; the Greek alphabet, which was brought by Cadmus into Greece from Phœnicia, and was also Pelasgian in its original, consisted of 16 or 17, to which were afterwards added 7 or 8 more, to make up 24. The ancient Arabic alphabet consisted of 24, to which 4 more letters have since been added; the Coptic alphabet consists of 32, the Turkish of 33, the Georgian of 36, the Russian of 39, the Spanish of 27, the Italian of 20, the Latin of 22, the French of 23, and the English of 26. See more on this subject under the head of WRITING. The Chinese have no proper alphabet, unless we reckon as such their keys to classes of words, distinguished by the number of strokes combined in each, of which they have 214 in number. As to the written characters of these alphabets, see WRITING.

ALT. That part of the great scale of sounds lying between F above the treble cliff note, and G in altissimo.

ALTAR. A table or raised place on which any offering was made to the Almighty. The first altar mentioned is that built by Noah after the flood. The two principal altars of the Jews were the altar of burnt offerings and the



altar of incense. Human depravity perverted

to idolatrous purposes those rites which were intended to typify the one atoning sacrifice of the gospel. This was the true origin of altars erected to lords many and gods many.

ALTERNATION. A rule in arithmetic by which the changes in any number of things may be determined. It consists of multiplying the numbers one into another, and the product is the number of possible changes.

ALTIMETRY. The art of taking heights by means of a quadrant, and founded on the principle, that the sides of triangles having equal angles, are in exact proportion to one another. When the object is accessible, its height is considered as one of the sides of the triangle; but when it is inaccessible, then two

observations are made in a right line, and the distance measured between them is the basis of the calculation.

ALTITUDE. The height of an object, or its elevation above that plane to which the base is referred; thus, in Mathematics the altitude of a figure is the perpendicular or nearest distance of its vertex from the base. The altitude of an object is the elevation of an object above the plane of the horizon, or a perpendicular let fall to that plane, as a perpendicular let fall from a tower.

Altitudes are either accessible or inaccessible. An accessible altitude of an object is that whose base we can have access to, so as to measure the distance between it and the station from which the measure is to be taken.

Inaccessible altitude is when the base of the object cannot be approached. Inaccessible altitudes may be measured either by geometry, trigonometry, optical reflection, or by the barometer. The altitudes of mountains may be determined best by the barometer, for as the weight of the atmosphere diminishes as we rise, the fall of the barometer determines the elevation of any place. The altitude of the pyramids in Egypt was measured in the time of Thales, by means of their shadow and a pole set upright beside them, making the altitudes of the pole and pyramid to be proportional to the length of their shadows. The instruments now commonly used in measuring altitudes are the geometrical square, the quadrant, and theodolite. At the level of the sea the mercury stands at about 29½ inches. On Mount Blanc, which is 15,500 feet high, the barometer falls to 12 inches, and in balloons it has fallen still lower.

ALTITUDE (in Optics.) The height of an object above a line drawn parallel to the horizon from the eye of the observer.

ALTITUDE OF THE EYE (in Perspective.) The perpendicular height of the eye above the geometrical plane.

ALTITUDE OF A STAR, &c. (in Astronomy.) The height of any star, &c. above the horizon, or on an arc of a vertical circle, intercepted between the star and the horizon. This altitude is either true or apparent, according as it is reckoned from the rational or sensible horizon, and the difference between these two is termed by astronomers the parallax of altitude.

ALTO (in Music books.) Italian for the upper or counter tenor, and is common in music of several parts.

ALTO RELIEVO. Sculpture which rises slightly above the ground of the piece; and used in friezes, cornices, and monuments.

ALUM. A mineral salt, composed of sulphuric acid, potash, alumina, and water. It is of a white colour, and of an astringent acid taste; natural alum, which was well known to the ancients, is a kind of whitish friable stone, formerly found in the island of Melos, Macedonia, Egypt, &c. Factitious alum is commonly made of a stone, of seaweed, and of urine. It is known by the names of rock or English alum, which is colourless; and Roman alum, which is of a reddish colour.

ALUMINA, or ALUMINE. The earth of alum, an argillaceous, soft, and insipid sort of earth, which is the base of alum, being the principal part of clay.

A. M. *Artium magister*, or Master of Arts in a university; used in Chronology for *anno mundi*, or the year dated from the creation; and in Astronomy used for *ante meridiem*, or before noon.

AMALGAM, or AMALGAMA. The mixture of mercury with some other metal. Amalgams are used either to render a metal fit to be spread on some works, as in gilding, or else to reduce the metal to a subtle powder. An amalgam of tin and mercury is used for looking glasses.

AMALGAMATION. The operation of mixing quicksilver with some other metal, by fusing the metal, and in that state adding a portion of mercury to it. Gold of all metals unites best with mercury, next to that silver, then lead, tin, and every other metal, except iron and copper, the last of which admits scarcely any of such amalgamation.

AMANUENSIS. A slave among the Romans, who used to be employed in writing for his master; also, any one among the moderns who is employed to transcribe for another.

AMARANTH. A plant which flourishes in the Indies and South America, remarkable for the lasting beauty of its flowers.

AMATEUR. One who follows a particular art or profession, not for gain but for pleasure.

AMBASSADOR. A person, who among civilized nations, represents his own nation at the seat of government of another nation.

AMBER. A hard, brittle, tasteless substance, mostly semitransparent, or opaque, and of a glossy surface. It is highly electric, and if a piece be kindled, it burns to the end with pungent white vapours, without melting.

AMBERGRIS. A solid sebaceous or fat substance, found floating in the sea, near the coasts of various tropical countries. It is supposed to be the excrement of the spermatic whale, having frequently been met with in the intestines of that fish.

AMBER TREE. A shrub, the beauty of which lies in its small evergreen leaves; these grow as close as heath, and when rubbed emit a fragrant odour.

AMBIDEXTER. A person who can use both hands with equal facility.

AMBUSCADE. A place where soldiers lie concealed, in order to surprise an enemy.

AMEN. A conclusion to prayer, signifying, *so be it.*

AMENDE. A pecuniary punishment imposed, according to the customs of France, by a judge, for any false prosecution or groundless appeal.

AMENDE HONORABLE. An infamous kind of punishment formerly inflicted in France on traitors, parricides, or sacrilegious persons, who were to go naked to the shirt, with a torch in their hand, and a rope about their neck, into a church or a court, to beg pardon of God, the court, and the injured party.

AMERCEMENT. A pecuniary punishment imposed on offenders at the mercy of the court; it is contracted from the Latin words a misericordia, which signify literally *from* or *at the mercy*. Amercements differ from fines, in as much as the latter are defined, and the former are proportioned to the fault, or more properly at the discretion of the court.

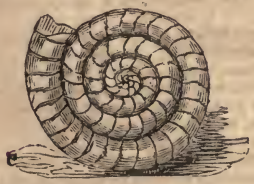
AMETHYST. A stone of secondary value, so named from a weak supposition, that wearing it was an antidote to stupor. It is a violet-blue quartz crystal. It is found in India.

AMIANTHUS. An incombustible mineral flax, which may be drawn into threads and wove into cloth. It is mostly found among rocks.

AMMONIA. An extremely volatile spirit, which, like other spirits, arises from hydrogen fixed in combination with some substance, which in this case is nitre or alkali; and as animals contain much nitrogen, so ammonia is a spirit of hartshorn, or urine, or camel's dung. Its effect on the nervous system, in fainting fits, is well known. Its combinations with other substances, owing to its activity, produce many curious compounds, and enable chymists to amuse the ignorant.

AMMONIAC, or GUM AMMONIAC. A resinous substance brought from the East Indies in drops or granules. The best kind is of a yellowish colour without and white within.

AMMONITÆ SNAKE STONE. A sort of fossil shells, made up of small circles, like those of a snake rolled up.



AMMUNITION. All warlike stores, and especially powder, ball, bombs, guns, and all missiles and utensils for an army.

AMNESTY. An act of pardon granted by a prince to his subjects for former offences, as the amnesty granted by Charles II. at the Restoration.

AMPHIBIA. A class of animals which live equally well in air or water, such as the phocæ, or seal tribe, frogs, lizards, crocodiles, eels, water serpents, snakes. They are remarkable for their tenacity of life; some will continue to move even when the head is cut off.

AMPHISCII. A name applied by geographers to the inhabitants of the torrid zone.

AMPHYCTIONS (in Grecian antiquity.) An assembly composed of deputies from the different states of Greece; and resembling, in some measure, the diet of the German empire.

AMPHITHEATRE. A circular building erected by the ancients, consisting of a central area for spectacles of various kinds, with seats around for the spectators, some of which, as the Coliseum at Rome, were capable of containing from 50,000 to 80,000 spectators, who were brutalized by contests between wild beasts, or beasts and men as savage as beasts.

AMPLIFICATION (with Rhetoricians.) An amplifying or enlarging upon an argument, either by aggravating or extenuating a crime, heightening an eulogium, or enlarging a narration, by an enumeration of circumstances, so as to excite proper emotions in the audience.

AMPLITUDE. An arch of the horizon, intercepted between the east or west points and the centre of the sun or stars at their rising and setting. It is called ortive, or eastern amplitude, when the star is rising; and occiduous, or western, when the star is setting.

AMPLITUDE MAGNETICAL. Is an arc of the horizon, contained between the sun or a star at its rising and setting, and the magnetical east or west point of the horizon, indicated by the magnetical compass, or the amplitude or azimuth.

AMPUTATION (in Surgery.) The cutting off a limb or other part of the body with an instrument.

AMULET. A supposed charm or preservative against witchcraft, mischief, or diseases. Amulets consist of stone, metal, simples, or whatever else the fancy suggested; sometimes words or sentences might be employed in this manner.

AMZEL. A bird of the blackbird kind, belonging to the same genus, merula, in the Linnæan system. The ring-amzel is remarkable for having a fine broad white ring at the lower part of its throat.

ANA. A name given to amusing miscellanies, consisting of anecdotes, traits of character, and incidents relating to any person or subject.

ANABASIS. The title of Xenophon's description of the younger Cyrus's expedition against his brother, in which the writer bore a principal part.

ANACHORITE. A monk who leaves the convent for a more solitary life.

ANACHRONISM. An error in chronology, as when an event is related to have happened in the reign of a certain prince, which happened either before or after.

ANACLASTICS. Another name for diop-

tries, or that branch of optics which relates to refracted light.

ANACREONTIC VERSE. A sort of verse so called from the Greek poet Anacreon, by whom it was first used. It consists of three feet, generally spondees and iambic. It is adapted to soft and tender subjects.

ANAGRAM. The transposition of the letters of one word so as to form another, as amor changed into Roma.

ANALEMMA. A projection of the sphere on the plane of the meridian, orthographically made by straight lines and ellipses, the eye being supposed at an infinite distance, in an equinoctial point.

ANALEMMA. Is also an instrument, a kind of astrolabe, made either of brass or wood, with an horizon fitted to it; it is used for finding the time of the sun's rising or setting, the length of the longest day, &c. The most ancient treatise on this instrument was written by Ptolemy, and published in 1562, with a commentary by Commandine. Other authors, as Aquilonius, Jacquet, Deschales, &c. have since written on the same instrument.

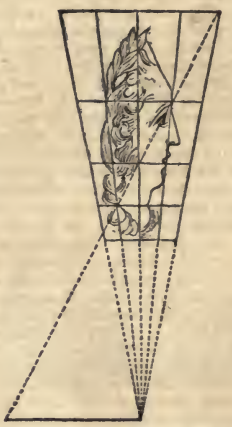
ANALOGY. An important process of reasoning, by which we infer similar effects and phenomena from similar causes and events; as when an animal who has tumbled into a pit and injured himself, approaches another pit, he infers, by analogy, that without care he shall injure himself again. This same principle constitutes all reasoning from past experience, however complicated. Many analogies are false, that is, similarities are assumed or fancied, and then false conclusions drawn.

ANALYSIS (in Logic.) The resolution or unfolding of any thing, so as to discover its component parts as opposed to synthesis. Analysis is the method of finding out truth, and synthesis is the method of explaining that truth to others. Among mathematicians, it is the art of discovering the truth or falsehood of a proposition, by supposing the question to be solved, and then examining the consequences, till some truth is discovered, or the absurdity and impossibility of the proposition is discovered. The analysis of finite quantities is properly called specious arithmetic, or algebra; the analysis of infinite quantities is the method of fluxions or differential calculus.

ANALYSIS (in Chymistry.) Is the decomposition of bodies, as vegetables and minerals, to discover their component parts.

ANALYTICS. A name given to algebra, being nothing else but a general analysis of pure mathematics; or else because it teaches how to solve questions, and demonstrate theorems, by searching into the fundamental nature and frame of the thing, which is, as it were, resolved into parts, or taken to pieces, and then put together again.

ANAMORPHOSIS (in Perspective and Painting.) A monstrous projection, or representation of an image on a plane or curve surface, which beheld at a certain distance shall appear regular and in proportion.



ANAPÆST. A metrical foot having the two first short and the last long (⏑⏑–), as pĭĕtās.

ANARCHY. A society without a government, or where there is no supreme governor.

ANATHEMA. In the general sense, a religious curse; in the particular sense, ecclesiastical excommunication.

ANATOMY. The act of dissecting bodies for the purpose of examining their structure, and the nature, uses, and functions of their several parts; also the knowledge of the human body derived from such dissections and examinations. It is generally applied to the examination of animals, and it has discovered the following circumstances of their structure. 1st. A system of bones which in a human subject amount to 246; 2. Of cartilages or gristles, which unite the bones, and contribute to their motion, assisted by ligaments, membranes, and bundles of muscles, called flesh, all relating to the strength and motion of the animal. Anatomy also discovers nerves, or white threads, which extend from the brain and the spinal marrow through all the organs, and are the means of sensation, and instru-

ments of the will. It appears, also, that the body is sustained and warmed by means of blood flowing from the heart through the arteries, to every part of the body, and brought back by veins. There is also a stomach for digestion, and glands for separating and assimilating the element; and intestines to carry off what is not appropriated. When applied to animals, it is termed Comparative Anatomy. In the science of anatomy the body is divided into the head, trunk, and extremities, and is composed of solids and fluids. The solids are the integuments, bones, cartilages, ligaments, membranes, vessels, muscles, nerves, and glands. The principal fluids are the blood, the chyle, the lymph, and the bile. Anatomy, from the names of the parts treated of, is divided into osteogeny, or the doctrine of the growth of the bones; osteology, the doctrine of the bones in the adult subject; chondrology, the doctrine of the cartilages; syndesmology, the doctrine of the ligaments; myology, the doctrine of the muscles; bursalogy, the doctrine of the bursæ mucosæ; splanchnology, the doctrine of the viscera; angeiology, the doctrine of the vessels; adenology, the doctrine of the glands; neurology, the doctrine of the nerves, &c. Anatomy, taken absolutely, applies only to the dissection of human subjects; the dissection and examination of brutes is called Comparative Anatomy. It is a wonderful system, and a most interesting object of study.

ANATOMY, History of. The science of anatomy was doubtless coeval with that of medicine, for the connexion between the two studies would naturally suggest to the inquirer into the diseases of the human body, the necessity of becoming acquainted with its component parts. In Egypt, the practice of embalming rendering it necessary to open the body, led them first to make observations on the structure of the human frame, which was afterwards encouraged by their kings, who ordered dead bodies to be regularly dissected for the perfection of the art; but, judging from some specimens which have been preserved of their anatomical observations, the science did not make any considerable progress among them. There is, however, no doubt but they laid the foundation, and the Greeks, who derived their earliest information from them, enlarged the boundaries of the science by their researches. Hippocrates, who lived about 400 years before Christ, is the first who expressly wrote on this subject; and the first anatomical dissection recorded was made by his friend Democritus, of Abdera. In Aristotle's works there are many minute particulars on this subject, which show that he had made the animal body his particular study. From the Greeks this science, after an interval of several centuries, passed again into Egypt, where, by the fostering care of the Ptolemies, it was revived, and made great advances. Erastratus, the pupil and friend of Theophrastus and Herophilus, laid the foundation of the famous school of anatomy at Alexandria, which was for many centuries in such high repute, that no one was supposed qualified for the medical art who had not studied at Alexandria. Herophilus is said to have dissected not less than 700 bodies, and among the rest some living subjects, but probably, as such a monstrous piece of cruelty must have defeated its own purpose, this latter part of the story is only an exaggeration. The Romans learnt from the Greeks the science of anatomy, as they did most other arts and sciences; for the first rudiments were taught to them by Archagathus, a Greek physician, who first established himself at Rome, and afterwards by Asclepiades, who flourished in the time of Pompey, and gained such repute, that he was looked upon as a second Hippocrates. He was succeeded by Cassius, who was supposed to be the disciple of Asclepiades, Celsus, Rufus, Pliny, Cœlius Aurelianus, and Aratæus, whose works abound with anatomical observations, and prove that, although their researches were not deep, their attention was drawn towards the subject. This is also still more evident from the works of Galen, who, in point of accuracy and minuteness of detail, surpassed all that went before him, and also all that followed him, until within the last three centuries. The Arabians and Saracens, on the decline of the empire, took the place of the Greeks and Romans in the cultivation of the sciences, but as by the tenets of their religion they were prohibited from touching dead bodies, and consequently could not practise dissection, they were obliged to content themselves with commenting upon Galen. To effect this object, we find that Abdollatiph, a teacher of anatomy in the thirteenth century, examined and demonstrated the structure of the bones by going to the burying grounds; and by that means he detected some errors in Galen. Although the Europeans were not under the same restrictions, yet during the middle ages it is certain that the science of anatomy made no advances. The best treatise then extant, which gained the author great repute, and was the standard book in the schools, was that of Mundinus, which appeared in 1315, yet this was nothing but an abstract of Galen. On the expulsion of the Moors, the prejudice against dissection abated, and copies of the Greek authors having found their way into Europe after the sacking of Constantinople, the study of anatomy revived considerably in the fifteenth century. Among the Italians, Achillinus, Benedictus, Berengarius, and Massa, added to the stock of anatomical knowledge by discoveries of their own from dissections. But the most distinguished names among the anatomists of that period, are those who flourished in the following century, namely, Vesalius, a native of Brussels, Sylvius, in France, Columbus, Fallopius, and Eustachius, in Italy, who, contrary to the practice of Galen, drew their

observations from the human body, rather than from that of the brutes. Vesalius gave the names to the muscles, most of which are retained to this day. Gabriel Fallopius, in his treatise entitled Observationes Anatomicæ, published in 1561, improved upon the descriptions of Vesalius. The Opuscula Anatomica of Bartholomæus Eustachius, published in 1563, have ever been admired for the correctness and exactness of their descriptions. His plates, which were intended for a large and complete work on the subject, were not published until 150 years after, when, being found in an old cabinet, they were edited by Lancisi, the pope's physician, who added a short explanatory text, because that of Eustachius could not be found. The next in the list of distinguished anatomists must be reckoned W. Harvey, who, after having studied in Italy under Fabricius ab Aquapendente, was led by the writings of his master to consider the manner in which the blood was circulated over the whole body, and the offices of the several vessels. Fabricius published an account of the valves which he discovered in the veins. This discovery affected the established doctrine of all ages, that the veins carried the blood from the liver to all parts of the body for nourishment; and Harvey was led by this to consider more narrowly the functions of the heart and the vascular system. The result of his investigation was, that the heart is the grand reservoir of the blood, that the arteries, which had hitherto been considered as air vessels, were the channels by which it was conveyed to all parts of the body, and the veins were the channels by which it was carried back to the heart. His doctrine at first met with considerable opposition, but farther researches put it at length beyond all question, and led to other discoveries of considerable importance. The lacteals, or vessels which carry the chyle to the intestines, were discovered by Ascelius, an Italian; the thoracic duct by Pecquet, in 1651; the lymphatics by Thomas Bartholine, a Danish anatomist; besides numerous other discoveries which were made by the help of magnifying glasses. These were first brought into use by Malpighi, after by Laurentius Bellinus, a distinguished anatomist of Italy, Swammerdam, Van Horn, De Graaf, and other Dutch anatomists, particularly Antonius Lewenhoeck, of Delft, who improved on Malpighi's use of microscopes, and succeeded in discovering globules in the blood, animalcules in the semen, and many other particulars which had hitherto escaped notice. From this time the science of anatomy made prodigious advances towards accuracy, so that each particular part has furnished matter for the labours of celebrated anatomists. The figures of the bones have been given in four large folio volumes, by Albinus, Cheselden, Trews, &c.; those of the muscles are given in two large folios, by Cowper and Albinus, the latter of which are particularly admired for their correctness. Haller has published a folio on the blood vessels; Dr. Munro, junior, on the nerves; Albinus, Roederer, and Hunter, on the gravid uterus; Weibrecht and others on the joints and fresh bones; Soemmering on the brain; Zinn on the eye; Cotunnius Mickel, junior, and others, on the ear; Walter on the nerves of the thorax and abdomen; Munro on the bursæ mucosæ; besides the several systems of anatomy from the pens of Albinus, Keil, Cheselden, Hunter, Munro, Douglas, Fife, Winslow, &c.

ANCESTRY. The line of ancestors or forefathers from which any person is descended.

ANCHOR. An instrument by means of which ships are fixed to one place on the water. It is made of iron, with a beam of wood placed in an opposite direction to that of the barbed iron flukes, so that when the beam lies flat, a position which it necessarily takes, the fluke points into the ground, and works deeper as the pull increases. The weight of the heaviest anchor is 96 cwt.

ANCHORAGE. The ground that is fit for holding the anchor; also the duty taken of ships for the use of the haven where they cast anchor.

ANCHOVY. A small seafish much used in sauce; it is so like the common sprat, that the latter is often pickled and sold under its name.

ANCIENTS. A word commonly applied to persons and nations who flourished before the introduction of Christianity, and specially applied to the Greeks, Romans, and their contemporaries.

ANDANTE (in Music.) Italian for exact and just time in playing, so as to keep the notes distinct from each other.

ANDROIDES (in Mechanics.) A term used to denote an automaton in the figure of a man, which, by means of certain springs and other mechanical contrivances, is enabled to walk, and perform other actions of a man. The most celebrated of these automatons which have been exhibited in modern times, are the flute-player of M. Vancanson, exhibited at Paris, the chess-player of M. de Kemplin, of Presburg, and the chess-player who lately performed wonders in that game in London. The construction of these automata is at present a secret.

ANDROMEDA. A small northern constellation consisting of twenty-seven stars.

ANEMOMETER. An instrument used for measuring the force and velocity of the wind.

ANEMONE. A beautiful flower originally brought from the east, but now much cultivated in our gardens. The word signifies properly wind-flower, because it was supposed that it opened only when the wind blew.

ANEMOSCOPE. A machine showing from what point of the compass the wind blows.

ANEURISM. A diseased swelling of an artery, attended with a continued pulsation.

ANGELS. Spiritual intelligences, the first in rank and dignity among created beings. Although the angels were originally created perfect, yet they were mutable; some of them sinned, and kept not their first estate; and so, of the most blessed and glorious, became the most vile and miserable of all God's creatures. They were expelled the regions of light, and with heaven lost their heavenly disposition, and fell into a settled rancour against God, and malice against men.

ANGEL. A gold coin, in value ten shillings, having the figure of an angel stamped upon it, in commemoration of the saying of Pope Gregory, that the English were so beautiful that they would be Angeli, not Angli, if they were Christians.

ANGELICA (in Botany.) A plant, of which there are seven species.

ANGLE. The space which lies between two lines which cross each other or meet at a point. When they meet perpendicularly, it is called a *right* angle, and is 90 degrees; when less than a right angle, it is called an *acute* angle; and when larger than a right angle, an *obtuse* angle; and when two circles cross each other, it is called a *spherical* angle; or two curves, a *curvilinear* angle; and the angles made by solids, are called *solid* angles.

ANGLER. A singular fish, also known at present by the name of the fishing frog, from the resemblance which it bears to that animal in the state of a tadpole.

ANGLICISM. An idiom or manner of speech peculiar to the English.

ANGLING. The art of fishing with a rod and line, to which is attached a hook and bait. The best season for angling is from April to October. A cloudy day, after a bright moonlight night, is good for fishing. Cool weather in summer, and warm weather in winter, are fit seasons, from six till nine in the morning, and from three till sun-set in the afternoon. A southerly wind in a dull warm day is the best time of any. Dean Swift is keenly satirical on angling. He describes it as "a stick and a string, with a fool at one end and a worm at the other."

ANGORA CAT. A species of the felis genus; its form is given in the engraving, but it is also remarkable as having one blue eye and the other yellow.

ANIMAL (in Natural History.) An organized and living body, endowed with sensation. Minerals increase; plants grow and live; but animals have the power of locomotion, of seeking and appropriating nourishment.

ANIMAL-FLOWERS. Sometimes called sea-nettles and sea-anemones, formed by worms or polype, called *mollusca*, from their softness, having no bones.

Sea Flowers.

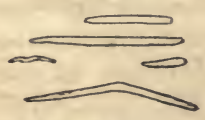
Rose of Jericho.

Umbrell Vorticell.

Drooping Vorticell.

ANIMALCULES. Such animals as are clearly discernible only by means of microscopes, for millions of millions of them might be contained in a thimble full of water, which is the best element for studying their motions. By the microscope many kinds of animalcules have been discovered, as different from each other as the horse from the mouse; some indeed so exceedingly minute, that a million would not equal in magnitude a large grain of sand, and, as more and smaller objects have ever been discovered, in proportion to the goodness of the glasses with which they have been viewed, it is highly probable that there are numberless other species, of a size much less than those already discovered. Every drop of water, and almost any fluid, except oils and ardent spirits, either does or will by standing exposed a few days in warm weather, swarm with living creatures. Some seem natural inhabitants of the fluids in which they are found; others live there only occasionally, in the manner of gnats, which from eggs dropped in water by their parents, become swimming animals; but, after a short time, shed their skins, appear in a form without resemblance to that before assumed, take wing, and claim kindred with the countless millions which rejoice in the air. The largest sort are thin and transparent; they turn frequently, and have many feet, resembling a tail. Their motion is swift, and their frequent turns and sudden stops would intimate that they were hunting after their prey, probably insects indefinitely smaller than themselves, that have hitherto escaped notice with the best glasses. Leenwenhoek says, no living creatures appear in rain water fresh descended, but after standing a few days, innumerable animalcules of different species, many thousand times smaller than a grain of sand, are visible by the microscope.

Vinegar Eels.



Hay-tea Eels.

ANIMAL KINGDOM. One of the three principal divisions, into which all organized bodies are divided by Linnæus. It comprehends six classes of animals; namely, Mammalia, or such as suckle their young, mostly quadrupeds; Aves, birds, which are oviparous; Amphibia, amphibious animals; Pisces, fishes, such as live only in water, and are covered with scales; Insecta, insects, which have few or no organs of sense, and a bony coat of mail; Vermes, worms, which have mostly no feet.

ANIME, or GUM ANIME. A resinous substance imported from New Spain and the Brazils.

ANNALS. A species of history, in which events are related in the exact order of chronology.

ANNEALING. The process of heating steel and other metal bodies, and then suffering them to cool again gradually.

ANNO DOMINI. Latin words for in the year of our Lord.

ANNOTTO. The pellicles of the seeds of a foreign liliaceous shrub, pressed together; used for colouring.

ANNUAL. An epithet for whatever happens every year, or lasts a year. An annual, in Botany, is a plant which dies within the year.

ANNUITY. The periodical payment of money, either yearly, half yearly, or quarterly; for a determinate period, as ten, fifty, or a hundred years; or for an indeterminate period, dependent on a certain contingency, as the death of a person; or for an indefinite term, in which latter case they are called perpetual annuities.

ANNULET. A small square member in the Doric capital.

ANNUNCIATION. The delivery of a message, particularly the angel's message to the Virgin Mary, concerning the birth of our Saviour. The festival in commemoration of that event is called Lady Day.

ANODYNES. Medicines so called because they ease pain and procure sleep, such as the medicinal preparations of the poppy.

ANOMALISTICAL YEAR (in Astronomy.) The time that the earth takes to pass through her orbit.

ANOMALOUS VERBS (in Grammar.) Verbs which are not conjugated regularly.

ANOMALY. In a general sense, irregularity; in Astronomy, the irregularity in the motion of a planet.

ANSER. A star of the fifth magnitude in the milky way.

ANSERES. The third order of birds, web-footed, including swans, geese, &c.

ANTARCTIC (in Astronomy.) The name of a circle of the sphere, which is opposite to the arctic or northern pole. It is nearly 23 and a half degrees distant from the south pole, which is also called the antarctic pole.

ANT-EATER. A quadruped which lives on ants, in Guinea or Brazil.

ANTECEDENT. The word in grammar to which the relative refers; as, God, whom we adore, the word God is the antecedent.

ANTEDATE. A date that precedes the real one; as the antedate of a bill, that which is earlier than the time when it is drawn.

ANTEDILUVIANS. Persons living before the deluge.

ANTELOPE. A beautiful kind of quadruped, of an elegant make, and is the roe of the Scriptures. Antelopes are singularly swift in their motion, and in general natives of hot climates, particularly in Africa and Asia. Europe has but two species, and America none.

ANTENNÆ. The horns or feelers of insects which project from their heads, and serve them in the sense of feeling and seeing.

ANTHEM. A sacred composition used as a part of Christian worship.

ANTHER. A part of the stamen of a flower which is at the top of the filament. It contains the pollen or farina, which it emits or explodes when ripe.

ANTHOLOGY. A collection of choice poems, particularly a collection of Greek epigrams so called.

ANTHROPOPHAGI; or CANNIBALS. Persons who eat the flesh of men as well as animals. Whole nations have been addicted to this practice, and it still prevails among some of the South Sea Islands. It is said that in some African cities, human flesh is exposed in the markets for sale, with that of animals, and is regarded as a great delicacy.

ANTI-CLIMAX. When a writer or speaker suddenly descends from the great to the little.

ANTIDOTE. A counterpoison, or any medicine generally that counteracts the effects of what has been swallowed.

ANTIMONY. A metallic, solid, heavy, brittle substance, which is very seldom found pure, but mostly mixed with other metals. In its pure state it is called the regulus of antimony. Crude antimony, in commerce, is a metallic ore, consisting of the metal called antimony combined with sulphur.

ANTIPAROS. A small island in the Mediterranean, famous for its large grotto, 250 feet deep, and 300 broad.

ANTIPODES. Persons so named in geography, who live diametrically opposite to one another, as it were feet to feet. They have equal latitudes, the one north, and the other south, but opposite longitudes; consequently when it is day to the one it is night to the other, and when summer to the one winter to the other.

ANTIQUARY. One who searches after the remains of antiquity. The monks who

were employed in making new copies of old books were formerly called antiquarii.

ANTISCII (in Geography.) People who live on different sides of the equator, and have their shadows at noon fall directly opposite ways.

ANTISEPTICS. Substances which resist putrefaction.

ANTITHESIS. A figure of speech, in which contraries are put in contrast with each other, as, He gained by losing, and by falling rose.

ANTOECI (in Geography.) People who live under the same meridian, east or west, but under opposite parallels of latitude; they have their noon or midnight at the same hour, but their seasons contrary.

ANTS, WHITE. Inhabitants of East India, Africa, and South America, far exceeding in wisdom and policy, the bee, the ant, or beaver. They build pyramidal structures divided into chambers, magazines, &c. as represented in the annexed engraving. These hills, or houses, are so strong as to bear four men to stand upon them, and in the plains of Senegal they appear like villages. Their social economy is of the most regular kind, and large masses of them act as soldiers, trained for offence and defence, and their assault is so vigorous, that even men and large quadrupeds, often become their victims.

Nests of the Termites, or White Ants.

ANVIL. An iron instrument, on which smiths hammer their work. It is usually mounted on a wooden block.

AORTA, otherwise called MAGNA ARTERIA. The great artery proceeding from the left ventricle of the heart, from which all the other arteries proceed mediately or immediately. It is distinguished into the descending or ascending, according to the manner in which it runs.

APATITE. Phosphate of lime; a mineral which occurs in tin veins, and is found in Cornwall and Germany.

APE. The highest order of the class *Simia*, or of four-handed animals, having a separate thumb on each, capable of being opposed to the other fingers. Their hands, &c. nearly resemble those of men; they are destitute of tails, walk upright, are mild and gentle, imitate human actions more closely, and are susceptible of greater attainments, than any others of the same tribe.

APERIENTS. Opening medicines.

APEX. A little woollen tuft on the cap of the flamen, or high priest, among the ancients.

APEX (in Mathematics.) The angular point of a cone or conic section.

APHÆRESIS (in Grammar.) The taking away a letter or syllable from a word.

APHELION. That point at which the earth, or any planet, is at the greatest distance from the sun.

APHORISM. A brief sentence in science, comprehending some experimental truth, as the Aphorisms of Hippocrates, &c.

APIARY. A place where bees are kept, which should be selected with great care, observing that it face the south, be defended from high winds, and not within the sphere of offensive smells, or liable to the attacks of hornets, or any other hostile vermin.

APIS. The bee; a genus of insects of the order hymenoptera.

APIS. An Egyptian deity, worshipped under the form of an ox.

APOCOPE (in Grammar.) The cutting off the last letter or syllable of a word.

APODAL. The first order of fishes in the Linnæan system, having no ventral fins, as the eel, the wolf fish, the sword fish, the lance, &c.

APOGEE. That point of the orbit at which the sun, moon, or any planet, is most distant from the earth. This term, as well as the perigee, was most in use among the ancients; modern astronomers, making the sun the centre of the universe, mostly use the terms aphelion and perihelion.

APOLLO. The god of medicine, music, poetry, and the fine arts. He was the son of Jupiter and Latona, born in the island of Delos, and is commonly represented naked, with his lyre or bow.

APOLOGUE. An instructive fable, or a feigned relation, intended to teach some moral truth; as the Fables of Esop.

APOPHTHEGM. A brief and pithy saying, particularly of some distinguished person.

APOPLEXY. A disorder which suddenly affects the brain, and takes away all sense and motion.

APOSTATE. One who has forsaken his religion; particularly one who has deserted the Christian profession.

A POSTERIORI. A term employed in demonstrating a truth; as when a cause is proved from an effect.

APOSTLES. Properly messengers or ambassadors, a term applied now particularly to the twelve disciples commissioned by our Saviour to preach the gospel to all nations.

APOSTROPHE. A figure of speech, by which the orator turns from his subject to address a person either absent or dead, as if he were present.

APOSTROPHE (in Grammar.) A mark of contraction in a word; thus, lov'd for loved.

APOTHECARY. Properly the keeper of a medicine shop; but more generally one who practices the art of pharmacy, or of compounding medicines. In London, apothecaries are one of the city companies, and are exempted, by stat. 9 Geo. I. from serving upon juries or in parish offices. They are obliged to make up their medicines according to the formulas prescribed in the college dispensatory, and are liable to have their shops visited by the censors of the college, who are empowered to destroy such medicines as they do not think good.

APOTHEOSIS. Deification, or the ceremony of placing among the gods, which was frequent among the ancients. This honour was conferred on several of the Roman emperors at their decease.

APPARATUS. A set of instruments or utensils necessary for practising any art, as a surgeon's apparatus, a chymist's apparatus.

APPARENT (among Mathematicians.) A term applied to things as they appear to us, in distinction from what they are in reality; as the apparent distance, magnitude, place, figure, &c. of any heavenly body, as distinguished from the real or true distance, &c.

APPARITION (in Astronomy.) The becoming visible. The circle of apparition is an imaginary line, within which the stars are always visible in any given latitude.

APPEAL (in Law.) The removal of a cause from an inferior to a superior court.

APPEARANCE (in Law.) The defendant's filing common or special bail, when he is served with a copy of or arrested on any process. There are four ways for defendants to appear to actions, in person, or by attorney, for persons of full age; by guardians, or next friends, for infants.

APPEARANCE (in Perspective.) The projection of a figure or body on the perspective plane; in Astronomy, the same as phenomenon, or phasis.

APPELLANT, or APPELLOR. One who makes or brings an appeal; it was formerly much used for one who brought an appeal in a criminal prosecution.

APPELATIVE (in Grammar.) A noun or name applicable to a whole species or kind, as, a man, a horse.

APPENDANT (in Law.) Any thing inheritable that belongs to a more worthy inheritance, as an advowson, or common, which may be appendant to a manor; or land to an office but land cannot be appendant to land, both be-

ing corporeal, and one thing corporeal may not be appendant to another.

APPLE. A well known fruit, from which cider is made.

APPOSITION (in Grammar.) The placing two or more substantives together, without any copulative between them, as, Cicero the orator.

APPRAISING. The valuing or setting a price on goods. An appraiser is one sworn to value goods fairly.

APPREHENSION. The first power of the mind, by which it simply contemplates things, without pronouncing any thing upon them.

APPRENTICE. A young person bound by indentures or articles of agreement to a tradesman, or artificer, to learn his trade or mystery. By the stat. 5 Eliz. no person can exercise any trade in any part of England, without having served a regular apprenticeship of at least seven years.

APPROACHES (in Fortification.) The works thrown up by the besiegers, in order to get nearer a fortress without being exposed to the enemy's cannon.

APPROVER (in Law.) One who, being indicted of treason or felony, confesses himself guilty, and accuses others to save himself: this is vulgarly called turning state's evidence.

APPROXIMATION. In general a getting near to an object; in mathematics, a continual approach to a root or quantity sought, but not expected to be found.

APPULSE (in Astronomy.) The approach of a plannet towards a conjunction with the sun or any of the fixed stars.

APPURTENANCES (in Law.) Things corporeal and incorporeal that appertain to another thing as principal; as hamlets to a chief manor. Outhouses, yards, orchards, gardens, &c. are appurtenant to a messuage.

APRICOT. A fine sort of wall fruit, which requires much sun to ripen it.

APRIL. The second month of Romulus' year, and the fourth of Numa's year, which began, as it does now, in January.

A PRIORI. A mode of reasoning by proving the effect from the cause.

APROPOS. Just in time.

APSIDES. The two points in the orbit of a planet, at the greatest and least distance from the sun.

APTERA. The seventh order of insects, having no wings, including spiders, fleas, earwigs, &c.; also lobsters, crabs, prawns, and shrimps.

AQUAFORTIS. A weak and impure nitric acid, commonly used in the arts. It is made of a mixture of purified nitre, or saltpetre, vitriol, and potter's earth, in equal parts, and is distinguished into single and double, the former of which is only half the strength of the latter.

AQUA REGIA. Nitro-muriatic acid; composed of a mixture of the nitric and muriatic acids, which dissolves gold.

AQUARIUS. The water-bearer, a constellation, and the eleventh sign in the zodiac, commonly marked thus (♒.)

AQUATICS. Trees or plants which grow on the banks of rivers and marshes and watery places.

AQUA-TINTE. A method of etching, which is made to resemble a fine drawing in water colours.

AQUEDUCT. A conduit for water by pipes. In the time of the emperor Nerva there were nine, which emptied themselves through 13,594 pipes of an inch diameter. That constructed by Louis XIV. for carrying the Bucq to Versailles, is 7000 fathoms long, with 2560 fathoms of elevation, and contains 242 arcades.

AQUEOUS HUMOUR. The watery humour of the eye, the first and outermost which is less dense than the crystalline.

ARABIAN. A native of a large country in Asia, consisting principally of immense deserts, with a few fertile spots. The climate is hot and dry, and on the deserts water is seldom found. The camel is the only animal used for crossing the deserts; it being able to travel many days without water, and carry from 1200 to 1500 pounds weight on its back. The inhabitants are ignorant and savage, subsisting principally by robbery. The horse of Arabia is celebrated for fleetness, beauty, hardiness, and docility.

ARABIC, or GUM ARABIC. A transparent kind of gum brought from Arabia, which distils from a plant of the acacia species. It is used for painting in water colours, and also by calico printers and other manufacturers, but it is difficult to procure it genuine. That which is in small pieces, and of a perfectly white colour, is reckoned the best.

ARABIC FIGURES, or CHARACTERS. The numeral characters now used in our arithmetic, which were introduced into England about the eleventh century.

ARBITER (in Civil Law.) A judge ap-

pointed by the magistrate, or chosen by the parties to decide any point of difference. An arbiter must judge according to the usages of law; but an arbitrator, who is a private extraordinary judge, chosen by the mutual consent of parties, is allowed a certain discretionary power.

ARBITRATION. A mode of deciding controversies by means of arbiters or arbitrators. (See ARBITER.)

ARBOR VITÆ. An evergreen shrub.

ARBUTUS. The strawberry-tree. A beautiful shrub, bearing a red roundish berry.

ARC. Any part of a curve line, as of a circle, ellipse, &c.

ARC, or ARCH DIURNAL (in Astronomy.) That part of a circle described by a heavenly body, between its rising and setting. The nocturnal arch is that which is described between its setting and rising.

ARCH. A contrivance by which bricks, stones, or iron, by pressing against each other, and against immoveable abutments, maintain their form, and possess sufficient strength for bridges and other purposes. Some arches are semicircular, which are called Saxon arches; others pointed, which are called Gothic.

ARCHBISHOP. The chief prelate, having authority over other bishops. There are two archbishops in England; namely, that of Canterbury, who has twenty-one bishops under him; and that of York, who has four.

ARCHDEACON. An officer in the church of England, who acts for the bishop, having a superintendent power over the clergy within his district.

ARCHDUKE. One having a pre-eminence over other dukes.

ARCHERY. The art of shooting with a bow; formerly a favourite diversion among the English, who were also much skilled in it as a military exercise. The practice of archery was much encouraged by their kings. It was followed both as a recreation and a service, and Edward III. prohibited all useless games that interfered with the practice of it on holidays and other intervals of leisure. By an act of Edward IV. every man was to have a bow of his own height, to be made of yew, hazel, or ash, &c.; and mounds of earth were to be made in every township, for the use of the inhabitants. There were two kinds of bows in use among the English; namely, the longbow and the crossbow; those who used the longbow were called archers, in distinction from the crossbowmen. The English archers were the most skilful in Europe, and were employed in the army long after firearms were introduced. The artillery company of London is an ancient fraternity of archers and bowmen, besides which there are several companies of archers in England, as the woodmen of Arden.

ARCHITECT. One who is skilled in architecture. The architect forms plans and designs for edifices, conducts the work, and directs the artificers employed in it.

ARCHITECTURE. The art of building, or the science which teaches the method of constructing any edifice for use or ornament. It is divided into civil, military, and naval architecture, according as the erections are for civil, military, or naval purposes. The two last kinds are otherwise called Fortification and Naval Architecture or Shipbuilding. (See FORTIFICATION and NAVAL ARCHITECTURE.)

ARCHITECTURE, HISTORY OF. The origin of civil architecture, or architecture properly so called, is commonly derived from the building of huts in a conical form, spreading wide at the bottom, and joining in a point at the top, the whole being covered with reeds, leaves, &c. But whatever may have been the form of the first buildings, there is no doubt that the making of regular habitations was one of the first things which necessity suggested to the reason of man; for we find that Cain, the son of Adam, built a city. Tents, or temporary residences, which were only suited to such as lead a wandering life, were not invented before the time of Jubal, the son of Tubal Cain; since that time, the Tartars have followed the practice, and the original inhabitants of America did the same. Every nation, in proportion to the degree of civilization which it has attained, has shown a disposition to exercise their ingenuity in the construction of their residences. Among the Egyptians, this art was carried to an extraordinary degree of perfection. Their pyramids, labyrinths, and some ruins of their palaces and other edifices, are still to be seen and admired as stupendous monuments of their industry, perseverance, and skill. Near Andera, in Upper Egypt, are the ruins of a palace of gray granite, the ceilings of which are supported by columns of such thickness, that four men can scarcely span them. The grand hall is 112 feet long, 60 high, and 58 broad. The roof of the whole edifice is a terrace, on which once stood an Arabian village. The Babylonians and Persians vied with the Egyptians, both in the grandeur and splendour of their buildings, as may be judged from the ruins still remaining. A staircase was to be seen some time ago, having 95 steps of white marble still standing, so broad and flat, that 12 horses might conveniently go abreast.

As these vast structures were not fitted for the general convenience of mankind, we must look to the Greeks for the art of architecture as it has since been exercised. From the simple construction of wooden huts, Vitruvius supposes the orders of architecture took their rise. When buildings of wood were superseded by solid and stately edifices of stone, they imitated the parts which necessity had introduced into the primitive huts; so that the upright trees, with the stones at each extremi-

ty of them, were the origin of columns, bases, and capitals; and the beams, joists, rafters, and the materials which formed the covering, gave birth to architraves, friezes, triglyphs, cornices, with the corona, mutules, modilions, and dentiles. To bring all these several parts to the state of perfection at which they arrived, was the work of long experience and much reasoning, aided by the invention of many tools. The Greeks improved upon the works of the Egyptians, so as to render them, if not so durable, at least more ornamental, and perhaps more really serviceable. The construction of arches was unknown to the ancient Assyrians and Babylonians. The roofs of their halls were flat, and covered with prodigiously large stones, some of them large enough to cover the whole room. They had columns, but they were ill proportioned, and the capitals were badly executed. The art of proportioning the various parts of a building belongs, in a peculiar manner, to the Greeks, from whom we derive the three principal orders: at the same time it must not be denied, that the Jewish nation had earlier examples of such proportion; and that, in all probability, the Greeks took their idea of a regular order in architecture from the temple of Solomon.

In the Doric Order, which is so called from Dorus, the son of Helenus, and grandson of Deucalion, the column approaches very nearly to the proportions of those to be found in Solomon's temple. This order was first employed by Dorus in the building of a temple at Argos, in honour of Juno, and was formed according to the proportions between the foot of a man and the rest of his body, reckoning the foot to be the sixth part of a man's height: they gave to a Doric column, taking in its chapiter, six of its diameters; that is to say, they made it six times as high as it was thick, but they afterwards added a seventh diameter.

The Ionic Order, which takes its name from the Ionians, in Upper Asia, was formed according to the proportions of a woman; making the height of the column to be eight times greater than the diameter. They also made channeling in the trunk, to imitate the folds in the dress of a woman, and by the volutes in the chapiter they represented that part of the hair which hung in curls on each side of the face; besides, the Ionians added a base to their column, which the Dorians originally had not.

The Corinthian Order, which was posterior to the other two, took its rise from an accident related by Virtruvius. A basket, with a tile over it, had been placed on the tomb of a young Corinthian maid, near which grew the herb acanthus, or bear's breech. The leaves of this plant rising up to the tile, then curled themselves down into a sort of volute, which being observed by Callimachus, the sculptor, he took the idea of representing such a circle of leaves in the capital of a column, that has since been characteristic of the Corinthian order. Scamozzi calls this the virginal order, because it bears all the delicacy in its dress peculiar to young virgins.

The Tuscan, or Etruscan Order, derives its name from the Etruscans, or Pelasgians, who first inhabited Etruria, in Italy; this is therefore looked upon as a Roman order. It has the proportions of the Doric order; but as it is one of the plainest and simplest orders, it is in all probability one of the most ancient. Vitruvius speaks of the proportions of this order, but there are no certain remains of it, unless we except the Trajan and Antonine pillars at Rome.

The Composite or Roman Order, is so called because it combines the proportions and decorations of the Corinthian order, with the angular volute and dentils of the Ionian, thus forming a new order, which was adopted by the Romans.

Both the Greeks and Romans were in the practice of using the figures of men and women instead of regular columns, whence arose the Persian or Persic Order, in which the statues of men, and the Caryatic Order, in which the statues of women served to support the entablatures, in the place of columns. The Romans had also their Termini for the support of entablatures, the upper part of which represented the head and breast of a human body, and the lower the inverted frustrum of a square pyramid. Persian figures are generally charged with a Doric entablature; the Caryatides with an Ionic or Corinthian architrave and cornice; and the Termini with an entablature of any of the three Grecian orders.

In their private buildings, the Roman architects followed the Greeks; but in their public edifices they far surpassed them in grandeur. Architecture was carried to its highest pitch of perfection in the reign of Augustus. The Pantheon, one of the finest monuments of antiquity, was built by Agrippa, the son-in-law of Augustus. Some of his successors, particularly Trajan and Antoninus, were no less favourable to the exercise of this art; but on the decline of the empire, architecture shared the fate of other arts, and declined also, but did not altogether drop. New modes of building were introduced, which acquired the name of styles; as the Gothic, Saxon, and Norman styles.

The Gothic style was so called because it was first used by the Visigoths. The Saxon and Norman styles was so called because they were respectively used by the Saxons before the Conquest, and by the Normans after, in the building of churches. The Saxon style was distinguished by the semicircular arch, which they seem to have taken partly from the Romans, and partly from their ancestors on the continent.

The Norman style was distinguished by the

following particulars: the walls were very thick, generally without buttresses; the arches, both within and without, semicircular, and supported by very plain and solid columns; of which examples are to be seen in the chancel at Oxford in Suffolk, and at Christ Church, Canterbury. Sometimes, however, the columns were decorated with carvings of foliage or animals, and sometimes with spirals, lozenge, or network.

These two styles continued to be the prevailing modes of building in England until the reign of Henry II. when a new mode was introduced, which was called modern Gothic. Whether this was purely a deviation from the other two modes, or whether it was derived from any foreign source, is not known. It is, however, supposed to be of Saracenic extraction, and to have been introduced by the crusaders. This supposition is strengthened by the fact, that the mosques and palaces of Fez, and also some of the cathedrals in Spain built by the Moors, are in this style; which ought therefore to be called Arabic, Saracenic, or Moresque. This style is distinguished by its numerous buttresses, lofty spires and pinnacles, large and ramified windows, with a profusion of ornaments throughout. It came into general use in the reign of Henry III.; when the circular gave way to the pointed arch, and the massive column to the slender pillar, of which the present cathedral church of Salisbury, begun at that period, affords the best specimen. From that time to the reign of Henry VIII. the pillars in churches were of Purbeck marble, very slender and round, encompassed with marble shafts a little detached, having each a capital adorned with foliage, which joining formed one elegant capital for the whole pillar. The windows were long and narrow, with pointed arches and painted glass; and the lofty steeples were furnished with spires and pinnacles. In the reign of Henry VIII. a new kind of low pointed arch was introduced, which was described from four centres, was very round at the haunches, and the angle at the top was very obtuse, as may be seen in Cardinal Wolsey's buildings. In the fifteenth and sixteenth centuries, the taste for Greek and Roman architecture revived, and brought the five orders again into use, although for sacred edifices the Saxon and Gothic styles still maintain the pre-eminence. The Italians were for a long time reckoned the greatest architects, but England may also boast of an Inigo Jones and a Sir Christopher Wren, who hold a very high rank in the art. Inigo Jones has left the banqueting house at Whitehall, Queen Catherine's Chapel at St. James's, the Piazza at Covent Garden, and other buildings, as proofs of his skill and taste. The works of Sir Christopher Wren even surpass those of his predecessor, both in number and magnitude. Among these stand foremost the Cathedral of St. Paul's, Greenwich Hospital, the Monument, Chelsea Hospital, the Theatre at Oxford, Trinity College Library, and Emmanuel College, Cambridge; besides upwards of fifty-two churches, and innumerable other public buildings.

ARCHITECTURE (in Perspective.) A sort of building, the members of which are of different measures and modules, and diminish in proportion to their distance, to make the building appear longer and larger to the view than it really is.

ARCHITRAVE. That part of a column or series of columns that is above or lies immediately upon the capital. It is the lowest member of the frieze, and is supposed to represent the principal beam in timber buildings. It is sometimes called the reason-piece, as in porticoes, cloisters, &c.; and the master-piece in chimneys.

ARCHIVAULT. The inner contour of an arch, or a frame set off with mouldings, running over the faces of the arch stones, and bearing upon the imposts.

ARCHIVES. Historical records; also, a place for depositing them.

ARCTIC. A space on the earth as far round the North Pole as the tropics are distant from the equator, 23 1-2°, within which the sun does not rise or set for a day or days within the year. The similar space round the South Pole is called the Antarctic Circle.

AREA. The site or space of ground on which any building is erected.

AREA (in Geometry.) The superficial contents of any figure, as a triangle, quadrangle, &c.

ARENA. That part of an amphitheatre where the gladiators contended, so called from the sand with which it was strewed.

ARGENT (in Heraldry.) The white colour in the coats of arms of baronets, knights, and gentlemen.

ARGO NAVIS. A constellation called after the ship of Jason and his companions.

ARGUMENT. Whatever is offered or offers itself to the mind, so as to create belief in regard to any subject or matter laid down.

ARGUMENT (in Astronomy.) An arc, whereby another arc is to be sought bearing a certain proportion to the first arc.

ARGUMENTUM AD HOMINEM (in Logic.) A mode of reasoning, in which an argument is drawn from the professed principles or practice of the adversary.

ARIES. The Ram, a constellation of fixed stars, and the first of the twelve signs of the zodiac, marked (♈.)

ARISTOCRACY. A form of government in which the power is vested in the nobility.

ARITHMETIC. The art of numbering or computing by certain rules, of which the four first and simplest are addition, subtraction, multiplication, and division. Vulgar Arithmetic is the computation of numbers in the ordinary concerns of life. Integral Arithmetic

treats of whole numbers; Fractional Arithmetic, of fractional numbers; Decimal Arithmetic, of decimal numbers. Universal Arithmetic is the name given to Algebra by Sir Isaac Newton.

ARITHMETIC, HISTORY OF. Of Arithmetic as a science, we know but very little as to its state and progress among the ancients. It is evident, from the bare consideration of our wants, and earliest impressions, that some knowledge of numbers, or some mode of computation, however imperfect, was coeval with society; and as the transactions of men became more complicated, it is reasonable to infer that they would hit on devices for facilitating and simplifying their calculations. Josephus asserts that Abraham, having retired from Chaldea into Egypt, during the time of a famine, was the first who taught the inhabitants of that country a knowledge both of arithmetic and astronomy, of which they were both before ignorant; a circumstance the more probable, as it is well known that the science of astronomy was first cultivated among the Chaldeans, and such advances made in that science as could not have been effected without the aid of arithmetical calculations.

The Greeks imagined that the science of arithmetic, as well as that of geometry, originated with the Egyptians; but this notion, as far as respects priority of discovery, was evidently erroneous, and no doubt arose from the circumstance of their having derived all their first ideas of the arts and sciences, as well as many of their fables, from the Egyptians. Thus, as the Egyptians believed that they were taught numbers by their god Theut or Thot, who presided over commerce, the Greeks assigned a similar office to their god Mercury. As the Phenicians were the first trading people, they naturally addicted themselves to the science and practice of arithmetic, which led Strabo to observe that the invention of the art belonged to them; but, as the Chaldeans were a more ancient people, this supposition is no less erroneous than the former. What advances were made by these people in the science we have no means of ascertaining, for nothing remains of the early writings on this subject, except what may be gathered from the commentary of Proclus on the First Book of Euclid's Elements. It appears that almost all nations were led to fix upon the same numeral scale, or the common method of notation, by dividing numbers into tens, hundreds, and thousands; a practice doubtless derived from the custom, so universally adopted in childhood, of counting by the fingers; which, being first reckoned singly from one to ten, and then successively over again, would naturally lead to the decimal scale or the decuple division of numbers. But they represented their numbers by means of the letters of the alphabet in the place of the modern numerals. Thus the Jews divided their alphabet into nine units, nine tens, and nine hundreds, including the final letters, as א Aleph, 1, ב Beth, 2, &c. to י Yod, 10; then כ Caph, 20, ל Lamed, 30, &c. to ק Koph, 100, ר Resh, 200, &c. to ץ Tsadi final, 900. Thousands were sometimes expressed by the units annexed to hundred, as אדלר, 1434; sometimes by the word אלף, 1000, אלפים, 2000, and with other numerals prefixed, to signify the number of thousands. To avoid using the divine name of יה, Jehovah, in notation, they substituted טו for fifteen. To the alphabet of the Greeks were assigned two numerical powers, namely, a power to each letter in order, as α, Alpha, 1, &c. to ω, Omega, 24, and a power similar to that adopted by the Jews, as α, Alpha, 1, &c. to κ, Kappa, 10, &c.; to ω, Omega, 800; then 900 was expressed by the character ϡ, and the thousands were denoted by a point under the letters after this manner, $\overset{\alpha}{,}$ 1000, $\overset{\beta}{,}$ 2000, &c.; the number of 10,000 was sometimes expressed by a small dash over the iota, thus, $\bar{\iota}$, but mathematicians employed the letter M, which, by placing under the small letters, indicated the number of thousands, as $\underset{\text{M}}{\alpha}$ for 10,000, $\underset{\text{M}}{\beta}$ for 20,000, &c. Diophantus and Pappus made Μυ to represent 10,000, and then by the addition of the letters, as βΜυ, for 20,000, &c. Apollonius divided numbers into periods of four characters, to which he gave a local value very similar to the modern mode of notation. The Greeks, however, were enabled, by means of their letters, to perform the common rules of addition, subtraction, multiplication, and division, from which, no doubt, the idea was taken of working with letters in our Algebra; for it is worthy of observation, that in their multiplication they proceeded from left to right, as in the multiplication of algebra at present. The Greeks had likewise another kind of notation by means of capitals, more properly initials of the names of numbers, and were used in inscriptions, as I for ἑα or μία, 1, Π for πέντε, 5, Δ for δέκα, 10, &c. The Roman notation, which is still used in marking dates, and numbering chapters, &c. consists of five of their capital letters, namely, I one, V five, X ten, L fifty, C one hundred, which are increased in this manner: the repetition of the I's increases numbers by units, as II for two, III for three, &c.; that of X's increases numbers by tens, as XX for twenty, XXX for thirty, &c.; and that of C's increases numbers by hundreds, as CC for two hundred, CCC for three hundred, &c.; also a less character before a greater diminishes the value of the number, as I before V, thus, IV, makes it four, I before X, thus, IX, makes it nine: on the other hand, a less character after a greater increases the value of the number, as I after V, thus, VI, makes it six, and I after X, thus, XI, makes it eleven. In what manner the Romans performed their arithmetical operations is not

known; but it is most probable that, as they were not a commercial nation, they followed the simplest forms of calculation: we must therefore look for further information on this subject to the period when the Arabs or Saracens introduced into Europe their mode of notation, which is not only distinguished from the others by the peculiarity of the characters, but also by their value and disposition. Although this notation consists of only nine digits, with the cipher 0, yet by giving a local power to these figures, namely, that of units, tens, hundreds, thousands, &c. they may be made to express numbers to an indefinite extent. Besides, this mode also presents many advantages by the additional facility with which all arithmetical operations are thus performed. By what nation this improvement was first made is not known. The Greeks, as before observed, were making advances towards it by giving a local value to certain periods of four numbers each, but it does not appear that they proceeded any further. The Arabs introduced it into Europe about eight hundred years back, whence it soon circulated among the different European nations; but although the first use of this scale is commonly ascribed to them, yet they acknowledge themselves indebted to the Indians for it; and as this latter people were in many respects very ingenious, it is not at all improbable that they were the authors of the invention. The cultivators of arithmetic in Europe may be dated from the thirteenth century, when Jordanus of Namur, the first writer on the subject that we know of, flourished. His arithmetic was published, with illustrations, by Joannes Faber Stapulensis, in the fifteenth century, but was less perfect than the treatises of Lucas de Burgo and Nicholas de Tartaglia in that and the subsequent centuries. In France, the subject of arithmetic was handled about the same time by Clavius and Ramus; in Germany, by Sturmius, Stifelius, and Henischius; and in England by Recorde, Diggs, and Buckley. After that period the writers on arithmetic became too numerous to be particularly specified, but the names of Briggs, Emerson, Napier, Maclaurin, Hutton, and Bonnycastle, are entitled to notice, for having systematized, enlarged, and in many particulars simplified the science.

ARK. The floating vessel in which Noah and his family were saved from the flood. It was 500 feet long, 90 broad, and 50 high.

ARK OF THE COVENANT, or MOSES' ARK. The chest in which the stone tables of the ten commandments, written by the hand of God, were laid up.

ARMADILLO. A quadruped, a native of Brazil and the West Indies, with the snout of a pig, the tail of a lizard, and the feet of a hedgehog. He is armed with a coat of impenetrable scales, under which he retires like a tortoise. It burrows in the earth, where it remains during the day-time; the largest are about three feet long.

ARMILLARY SPHERE (in Astronomy.) An artificial sphere, composed of a number of circles, of metal, wood, or paper, representing the several circles of the sphere of the world put together in their natural order. The armillary sphere revolves upon an axis within a silvered horizon, which is divided into degrees, and moveable every way upon a brass supporter. In Pembroke Hall, Cambridge, England, there is an armillary sphere constructed by Dr. Long, which is 18 feet in diameter, and will contain more than thirty persons sitting within it, to view, as from a centre, the representation of the celestial spheres. That part of the sphere which is not visible in England is cut off; and the whole is so contrived, that, by being turned round, it exhibits all the phenomena of the heavenly bodies.

ARMORY. A branch of the science of heraldry, consisting in the knowledge of armorial bearings or coats of arms, which serve to distinguish the quality of the bearer.

ARMOUR. All such habiliments as serve to defend the body from wounds inflicted by darts, swords, lances, &c.

ARMY. A body of soldiers consisting of horse and foot, under the command of a general and subordinate officers, and completely equipped and disciplined for service. An army is generally divided into a certain number of corps, each consisting of brigades, regiments, battalions, and squadrons; when in the field, it is formed into lines; the first line is called the vanguard, the second the main body, the third the rearguard, or body of reserve.

The middle of each line is occupied by the foot, the cavalry forms the right and left wing of each line, and sometimes squadrons of horse are placed in the intervals between the battalions.

AROMA. A general name for all sweet spices, but particularly myrrh; also, the odoriferous principle which produces the fragrance peculiar to some plants.

ARRAC. A spirituous liquor distilled in India from the cocoa tree, rice, or sugar. It is very strong, and intoxicates more than rum or brandy.

ARRAIGNMENT (in Law.) The bringing a prisoner forth, reading the indictment to him, and putting the question of guilty or not guilty.

ARRAY. The drawing up of soldiers in order of battle.

ARREARS. Money unpaid at the due time, as rent, moneys in hand, &c.

ARREST (in Law.) The apprehending and restraining a man's person in order to compel him to be obedient to the law. This, in all cases except treason, felony, or breach of the peace, must be done by the lawful warrant of some court of record or officer of justice. Arrest of judgment, is the staying of judgment, or not proceeding to judgment.

ARROW. A missile weapon, which is commonly discharged from a bow. When this weapon is borne in coats of arms, it is said to be barbed and feathered.

ARROW-ROOT. An Indian root, of which starch is made. It is also used medicinally.

ARSENAL. A depository for military stores.

ARSENIATE. A sort of salts formed by the combination of arsenic acid with different bases, as the arseniate of ammonia, &c.

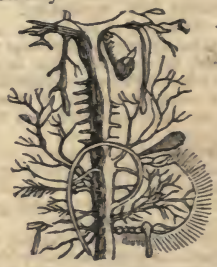
ARSENIC. A ponderous mineral body. It is yellow, white, and red. Yellow arsenic is the native arsenic dug out of the mines, otherwise called Arsenic Ore. White arsenic is drawn from the yellow by sublimating; and is reduced to powder by the mixture of oxygen, or exposure to the air. This is sometimes used in medicine in small quantities, but is otherwise a deadly poison. Red arsenic is the yellow arsenic rubified by fire, when it is called realgal.

ARSENITE. A sort of salts formed by the combination of arsenious acid with different bases.

ARSIS (in Grammar.) The elevation of the voice, in distinction from thesis or the depression of the voice. Arsis and thesis, in Ancient Music, is applied to the raising and falling of the hand in beating of time.

ART. The contrivance and use of things by the help of thought and experience, and according to prescribed rules, so as to make them serve the purposes for which they were designed. Liberal or fine arts are those which are noble and worthy to be cultivated without regard to lucre, as painting, poetry, music, &c. Mechanic arts are those wherein the hand and body are more concerned than the mind. Terms of art are such words as are used in regard to any particular art, profession, or science.

ARTERY. A hollow, fistulous, conical canal, which serves to receive the blood from the ventricles of the heart, and to distribute it to all parts of the body.



ARTICHOKE. A plant very like the thistle, with scaly heads similar to the cone of the pine tree. At the bottom of each scale, as also at the bottom of each floret, is the well known fleshy edible substance. The Jerusalem Artichoke is a plant, the root of which resembles a potatoe, having the taste of the artichoke.

ARTICLE (in Law.) The clause or condition in a covenant.

ARTICLE (in Grammar.) A particle, which in most languages serves to denote the gender and case of nouns; and in languages which have not different terminations it serves to particularize the object referred to.

ARTICULATION (in Anatomy.) The junction of two bones intended for motion. There are two kinds; the diarthrosis, which has a manifest motion, and synarthrosis, which has only an obscure motion.

ARTICULATION. The articulate or distinct utterance of every letter, syllable, or word, so as to make one's self intelligible.

ARTIFICERS. Persons employed in the performance of mechanical arts.

ARTILLERY. A collective name denoting all engines of war, but particularly cannon, mortars, and other large pieces, for the discharge of shot and shells. It is also employed to denote the science which teaches all things relating to the artillery, as the construction of all engines of war, the arrangement, movement, and management of cannon and all sorts of ordnance, used either in the field, or the camp, or at sieges, &c.

ARTILLERY, Park of. A place set apart in a camp for the artillery and large firearms.

ARTILLERY, Train of. A set or number of pieces of ordnance mounted on carriages.

ARTILLERY, FLYING. A sort of artillery, so called from the celerity with which it can be moved. Seats are contrived for the men who work it, and a sufficient force of horses is applied to enable them to proceed at a gallop; each horse being rode by a separate driver. This kind of artillery was introduced by the French during the late war, and has been adopted by other nations.

ARTIST. A proficient in the fine arts.

ARUNDELIAN MARBLES. Ancient marbles illustrative of the history and mythology of the ancients, so called from the Earl of Arundel, by whom they were transported from the island of Paros into England. They contain a chronicle of the city of Athens, supposed to have been inscribed thereon 264 years before Christ.

ASA-FŒTIDA. A gum resin of a very fetid smell, obtained from the ferula asa-fœtida, a perennial plant, which is a native of Persia. It comes into this country in small grains of different colours, hard and brittle.

ASBESTOS. A mineral substance, of which Amianthus is one of its principal species. This consists of elastic fibres, somewhat unctuous to the touch, and slightly translucent. The ancients manufactured cloth from the fibres of the asbestos for the purpose, as is said, of wrapping up the bodies of the dead when exposed on the funeral pile; it being incombustible in its nature. It is found in many places in Asia, Europe, and America.

ASCARIDES. Worms that infest the intestinum rectum, and cause a violent itching; also a kind of worms which infest the intestines of all animals.

ASCENSION (in Astronomy.) That degree of the equator reckoned from the first of Aries eastward, which rises with the sun or a star. This is either right or oblique, according as it rises in a right or an oblique sphere.

ASCENSIONAL DIFFERENCE. The difference between the right and the oblique ascension in any point of the heavens.

ASCENT. The rising of fluids in a glass tube or any vessel above the surface of their own level.

ASH. A well known tree, the timber of which is next to the oak in value, being used in every sort of handicraft.

ASHES. The remains of any substance that has been burned; and when of metals, called dross, calces, or oxides.

ASH-WEDNESDAY. The first day in Lent, so called from the custom of fasting in sackcloth and ashes.

ASIATIC. A native of Asia, which in many respects is the most important quarter of the world, containing the populous empires of China and Japan, the East Indies, Persia, Arabia, Turkey, Tartary, and Siberia. It was the parent of civilization, and the seat of the Babylonian, Assyrian, and Persian empires; besides being the locality of the Jewish histories contained in the Bible. The engraving represents the general costume of the inhabitants of Asia.

ASP. A very small kind of serpent, peculiar to Egypt and Libya, the bite of which is deadly. Its poison is so quick in its operations, that it kills without a possibility of applying any remedy. Those that are bitten by it are said to die within three hours, by means of sleep and lethargy, without any pain; wherefore Cleopatra chose it as the easiest way of dispatching herself.

ASPARAGUS. A valuable esculent plant, which requires three years at least to bring it to maturity from the time of sowing the seed, and will not yield vigorously without a continual supply of manure.

ASPEN-TREE. A kind of white poplar, the leaves of which are small, and always trembling.

ASPHALTUM, or JEWS' PITCH. A solid, brittle, ponderous substance, which breaks with a polish, and melts easily. It is found in a soft or liquid state on the surface of the Dead Sea, a lake in Judea, and by time grows dry and hard. The Egyptians used asphaltum in embalming, which they called mumia mineralis.

ASS. A well known useful quadruped, re-

markable for its patience, hardiness, and long life. The milk of the female is highly esteemed for its light and nutritious quality, and for that reason recommended for consumptive persons.

ASSASSINATION (in Law.) The murdering a person for hire.

ASSAULT (in Law.) The offering or attempting, with force and violence, to do a corporal hurt to another, as by striking at him with or without a weapon, as distinguished from a battery, which is any injury actually done to a person.

ASSAY. A mode of trying metals, or separating them from all foreign bodies: thus, gold and silver are assayed by the refiner, to obtain them in their purest state. This was formerly called the Touch, and those who had the charge of assaying were called Officers of the Touch. There are two kinds of assaying, namely, one before metals are melted, the other after they are struck. In the first case the assayers usually take 14 or 15 grains of gold, and half a dram of silver, if it be for money, and 18 grains of the one, and a dram of the other, if for other uses; in the second case, they take one of the pieces of money of each sort. The Assay of Weights and Measures was an examination of them by an officer appointed for that purpose.

ASSAYING. The particular mode of trying ores or mixed metals by means of proper fluxes, in order to discover the proportion of metal, as also of the other ingredients, as alum, sulphur, vitriol, and the like, which are contained in them. Gold is obtained pure by dissolving it in nitro-muriatic acid, when the metal may be precipitated by dropping in a diluted solution of sulphate of iron; the precipitate which is in the form of a powder is pure gold. Silver is obtained pure by dissolving it in nitric acid, and precipitating it with a diluted solution of sulphate of iron.

ASSETS (in Law.) Goods and chattels sufficient for an heir or executor to discharge the debts and legacies of the testator or ancestor.

ASSIGN (in Law.) One to whom any thing is assigned or made over, as an executor, &c.; also an assignee or assign to a bankrupt's estate.

ASSIMILATION (in Physics.) The process in the animal economy by which the food is converted into nourishment for the body.

ASSIZES. A meeting of the judges, the sheriff, and juries, for the purpose of making jail deliveries, and trying causes between individuals.

ASSOCIATION (of Ideas.) Two or several ideas constantly and immediately following each other; so that the mention of the one shall almost certainly suggest the other.

ASSUMPSIT (in Law.) A voluntary promise by which a man binds himself to pay any thing to another, or to do any work.

ASSURANCE, or INSURANCE. An engagement by which a person becomes bound for a specified sum, and for a limited period, to indemnify another for any losses which his property may sustain from fire or shipwreck, &c.

ASTERISK. A star (*) used in printing as a mark of reference.

ASTERN. Behind a ship.

ASTEROIDS. The new planets, Ceres, Juno, Pallas, and Vesta, lately discovered.

ASTHMA. A disease of the lungs, causing painful, difficult, and laborious breathing, with a hissing cough.

ASTRAGAL (in Anatomy.) The ancle bone; in Architecture, a small round moulding serving as an ornament to the tops and bottoms of columns.

ASTRAGAL (in Gunnery.) A small moulding encompassing a cannon.

ASTROLABE. An instrument for taking the altitude of the sun or stars at sea.

ASTROLOGY. An art formerly much cultivated, but now exploded, of judging or predicting human events from the situation and different aspects of the heavenly bodies.

ASTRONOMY. The science which treats of the sun, moon, earth, planets, and other heavenly bodies, showing their magnitudes, order, and distances from each other, measuring and marking their risings, settings, motions, appearances, the times and quantities of their eclipses, &c. It comprehends what was anciently called the doctrine of the sphere, and is a mixed mathematical science.

ASTRONOMY, HISTORY OF. Of all the sciences which have engaged the attention of mankind, none appears to have been cultivated so early as that of astronomy, which treats of the noblest and most interesting objects of contemplation. Josephus informs us that Seth, the son of Adam, is said to have laid the foundations of this science, and that his posterity, understanding from a prediction of Adam that there would be a general destruction of all things, once by the rage of fire and once by the violence and multitude of waters, made two pillars, one of brick and the other of stone, and engraved their inventions on each, that if the pillar of brick happened to be overthrown by the flood, that of stone might remain; which latter pillar, Josephus adds, was to be seen in his day. He also ascribes to the antediluvians a knowledge of the astronomical cycle of 600 years, but upon what authority we are not informed.

The account is, however, not improbable; for historians generally agree in assigning the origin of astronomy to the Chaldeans soon after the deluge, when, for the purpose of making their astrological predictions, to which they were much addicted, as also for that of advancing the science of astronomy, they devoted themselves to the study of the heavenly bodies. The Chaldeans were in fact a tribe of Babylonians, who constituted the priests, philoso-

phers, astronomers, astrologers, and soothsayers of this people, whence a Chaldean and a soothsayer became synonymous terms. These Chaldeans discovered the motions of the heavenly bodies; and, from their supposed influences on human affairs, pretended to predict what was to come. The planets they called their interpreters, ascribing to Saturn the highest rank; the next in eminence was Sol, the sun; then Mars, Venus, Mercury, and Jupiter. By the motions and aspects of all these they foretold storms of wind and of rain, or excessive droughts, as also the appearance of comets, eclipses of the sun and moon, and other phenomena. They also marked out thirty-six constellations, twelve of which they placed in the zodiac, assigning to each a month in the year, and thus dividing the zodiac into twelve signs, through which they taught that the several planets performed their revolutions. They appear not to have had much idea of the immense distance of some of the planets from the sun, but accounted for the time they took in performing their revolutions by the slowness of their motions. They, however, held that the moon completed her course the soonest of any, not because of her extraordinary velocity, but because her orbit, as it would now be called, was less than that of any of the heavenly bodies. They taught that she shone with a light not her own, and that when eclipsed she was immersed in the shadow of the earth. Of the eclipses of the sun they appear to have had no just idea, nor could they fix the time when they should happen. Their ideas of the earth as a celestial body were also crude and imperfect.

Astronomy was cultivated in Egypt nearly about the same time as among the Chaldeans; and, according to the opinions of some, the honour of the invention is due to them: but the most probable conclusion is, that as these two nations were coeval, and both addicted to the arts and sciences, they cultivated astronomy at the same time. The Egyptians had at a very early period their college of priests, who were all accurate observers of the stars, and kept, as Diodorus observes, registers of their observations for an incredible number of years. It is said, that in the monument of Osymandyas there was a golden circle of 365 cubits in circumference and one cubit thick, divided into 365 parts, answering to the days of the year, &c. The Egyptians discovered that the stars had an annual motion of $50''$, $9'''$, $45''''$ in the year; and Macrobius asserts that they made the planets revolve about the sun in the same order as we do. From Chaldea and Egypt astronomy passed into Phœnicia, where it was applied by that trading people to the purposes of navigation. The Arabians also, one of the most ancient nations in the world, cultivated astronomy as far as was needful to answer the ends of their pastoral life, by observing the stars, their position, and influence on the weather. In travelling through the desert, we are informed that, at a very early period, they used to direct their course by the Great and Little Bear, as is done at sea to this day. They also gave names to the stars, mostly in allusion to their flocks and herds; and they were so nice in this matter, that no language abounds with so many names of stars and asterisms as the Arabic.

As to the Indians and Chinese, there is no doubt but that they cultivated astronomy at a very early period, and that the Brahmins of the former people, being altogether devoted to speculative sciences, made advances in that of astronomy equal to any of the nations of antiquity. M. Bailly informs us, in his history, that he examined and compared four different sets of astronomical tables of the Indian philosophers, namely, that of the Siamese explained by M. Cassini in 1689; that brought from India by M. le Gentil, of the Academy of Sciences, and two other manuscript tables, found among the papers of the late M. de Lisle; all of which he found to accord with one another, referring to the meridian of Benares. It appears that the Indians date their astronomy from a remarkable conjunction of the sun and moon, which took place at the distance of 302 years before Christ; and M. Bouilly concludes that, from our most accurate astronomical tables, such a conjunction did take place. The Indians calculate eclipses by the mean motions of the sun and moon, commencing at a period five thousand years distant; but, without giving them credit for an antiquity which is at variance with all historical documents, sacred and profane, it suffices here to observe that they have adopted the cycle of nineteen years, and that their astronomy agrees with modern discoveries in many particulars, as to the obliquity of the ecliptic, and an acceleration of the motion of the equinoctial points. They also assign inequalities to the motions of the planets, answering very well to the annual parallax, and the equation of the centre.

The Greeks, without doubt, derived their astronomical knowledge from the Egyptians and Phœnicians by means of several of their countrymen, particularly Thales the Milesian, who, about 640 years before Christ, travelled into Egypt, and brought from thence the chief principles of the science. He was the first among the Greeks who observed the stars, the solstices, the eclipses of the sun and moon, and proceeded so far as to predict an eclipse of the sun. It appears, however, that, before his time, many of the constellations were known, for we find mention of them in Hesiod and Homer, two of their earliest writers. After Thales, Anaximander, Anaximenes, Anaxagoras, but above all, Pythagoras, distinguished themselves among the number of those who cultivated astronomy. The latter, after having resided a long time in Egypt and other foreign parts, established a sect of philosophers in his

own country, known by the name of Pythagoreans. He taught, among other things, that the sun was in the centre of the universe and immoveable; that the earth was round, and the inhabitants were antipodes to each other; that the moon reflected the rays of the sun, and was inhabited like the earth; that comets were wandering stars; that the milky way was an assemblage of stars, which derived its white colour from the brightness of their light, besides a number of other particulars, some of which are admitted in the present day. Philolaus, a Pythagorean, maintained the doctrine of the earth's motion round the sun, 450 years before Christ, and Hicetus, a Syracusan, taught, a hundred years after, the diurnal motion of the earth on its own axis; also Meton, the inventor of the Metonic cycle, and Euctemon, observed the summer solstice 432 years before Christ, besides the risings and settings of the stars, and what seasons they answered to. The same subject was treated of at large by Aratus in his poem entitled Phænomena. Eratosthenes, a Cyrenian, who was born in 271 B. C. measured the circumference of the earth; and, being invited to the court of Ptolemy Evergetes at Alexandria, he was made keeper of the royal library, and set up there the armillary spheres which Hipparchus and Ptolemy afterwards used so effectually. He also determined the distance between the tropics to be 11-83 of the whole meridian circle, which makes the obliquity of the ecliptic in his time to be 23 degrees 51 minutes and one-third. Archimedes is said to have constructed a planetarium to represent the phenomena and motions of the heavenly bodies; and many others added to the stock of astronomical knowledge, but none so much as Hipparchus, who flourished about 140 years B. C. and surpassed all that had gone before him in the extent of his researches. He showed that the orbits of the planets were eccentric, and that the moon moved slower in her apogee than in her perigee. He constructed tables of the motions of the sun and moon; collected accounts of eclipses that had been computed by the Chaldeans and Egyptians; and calculated such as would happen for six hundred years to come; besides correcting the errors of Eratosthenes in his measurement of the earth's circumference, and computing the sun's distance more accurately. He is, however, most distinguished by his catalogue of the fixed stars to the number of a thousand and twenty-two, with their latitudes and longitudes, and apparent magnitudes. These, and most other of his observations, are preserved by his illustrious successor Ptolemy.

From the time of Hipparchus to that of Ptolemy, an interval of upwards of two centuries, few or no advances were made in astronomy. Claudius Ptolemy, who was born at Pelusium in Egypt, in the first century of the Christian era, is well known as the author of a great work on astronomy, entitled his Almagest, which contains a complete system of astronomy drawn from the observations of all preceding astronomers in union with his own. He maintained the generally received opinion of the sun's motion, which continued to be universally held until the time of Copernicus. The work of Ptolemy being preserved from the grievous conflagration that consumed the Alexandrian library during the ravages of the Saracens, was translated out of the Greek into the Arabic, A. D. 827; and, by the help of this translation, the Arabians, who now addicted themselves to the study of astronomy, cultivated it with great advantage under the patronage of the caliphs, particularly Al Mamon, who was himself an astronomer, and made many accurate observations by the help of instruments, which he himself constructed. He determined the obliquity of the ecliptic in his time to be 23 degrees 35 minutes. Among the Arabian authors of this period was Alfragan, who wrote his Elements of Astronomy, and Albetegnius, who flourished about 880. This latter compared his own observations with those of Ptolemy, and computed the motion of the sun's apogee from Ptolemy's time to his own. He also composed tables for the meridian of Arabia, which were much esteemed by his countrymen. After this, Ebn Younis, astronomer to the caliph of Egypt, observed some eclipses, by means of which the quantity of the moon's acceleration since that time has been determined; also Arzechel, a moor of Spain, observed the obliquity of the ecliptic; and Alhazen his contemporary, wrote on the twilight, the height of the clouds, and the phenomena of the horizontal moon. He likewise first employed the optical science in astronomical observations, and showed the importance of the theory of refraction in astronomy.

In the thirteenth century, astronomy, as well as other arts and sciences, began to revive in Europe, particularly under the auspices of the emperor Frederick II.; who, besides restoring some decayed universities, founded a new one, and in 1230 caused the works of Aristotle, and the Almagest of Ptolemy, to be translated into Latin. Two years after this, John de Sacro Bosco, or John of Halifax, published his work De Sphæra, a compendium of astronomy drawn from the works of Ptolemy, Alfragan, Albetegnius, and others. This was held in high estimation for some centuries, and was honoured with a commentary from the pen of Clavius and other learned men. In 1240, Alphonsus king of Castile, a great astronomer himself, and an encourager of astronomers, corrected with their assistance the tables of Ptolemy, which, from him, were called the Alphonsine tables. About the same time Roger Bacon published his tracts on astronomy, and shortly after Vitellio, a Polander, in his treatise on optics, showed, in accordance with Alhazen, the use of refrac-

tion in astronomy. Nearly two centuries elapsed from this period before any farther progress was made in the science, when Purbach composed new tables of sines for every ten minutes, constructed spheres and globes, wrote commentaries on Ptolemy's Almagest, corrected the tables of the planets and the Alphonsine tables, determined the obliquity of the ecliptic at 23 degrees 33 minutes and a half, and begun, at his death, a new series of tables for computing eclipses. He was succeeded by John Muller, commonly called Regiomontanus, Bernard Walther, John Werner, and others. John Werner showed that the motion of the fixed stars, since called the precession of the equinoxes, was about 1 degree 10 minutes, in a hundred years. The celebrated Copernicus came next in order, who distinguished himself by calling in question the Ptolemaic system of the universe, and reviving that of Pythagoras. After making a series of observations, and forming new tables, he completed in 1530 his work, first published under the title of De Revolutionibus Cœlestium Orbium, and afterwards under that of Astronomia Instaurata, in which he set forth the system since known by the name of the solar system, in which all the planets are considered as revolving round the sun as their immoveable centre.

The science of astronomy henceforth continued to receive regular accessions and improvements by a series of writers, as Schoner, Nonnius, Appian, Gemma, Frisius, Byrgius, &c. Besides, William IV., landgrave of Hesse Cassel, applying himself to the study, formed, by the help of the best instruments then to be procured, a catalogue of four hundred stars, with their latitudes and longitudes, adapted to the beginning of the year 1593. About this time the Copernican system found a strenuous though unsuccessful opponent in Tycho Brahe, a Danish nobleman, who to obviate the objections against the Ptolemaic system, advanced an hypothesis of his own, which added less to his reputation, than the accurate observations which he made, by the help of improved instruments, in a new observatory built for him by order of the king of Denmark. His friend Kepler, who enjoyed the title of mathematician to the emperor, finished his tables after his death, and published them under the title of Rhodolphine tables. This latter astronomer discovered that all the planets revolve round the sun, not in circular but in elliptical orbits; that their motions are not equable, but quicker and slower as they are nearer to the sun or farther from him; besides a number of other observations on the motions and distances of the planets. He also concluded, from his observations on the comets, that they are freely carried about among the orbits of the planets in paths that are nearly rectilinear. To the astronomers of this age may be added Bayer, who, in his Uranometria, has given a representation of all the constellations, with the stars marked on them, and accompanied with the Greek letters for the convenience of reference.

The seventeenth century added many great names to the list of astronomers, as Galileo, Huygens, Cassini, Hevelius, Newton, and Flamstead, &c. As the Copernican system had met with an opponent in one that ranked high in the science, it found a defender in Galileo, an Italian nobleman, who in his Dialogi, in 1632, drew a comparison between the Ptolemaic and Copernican system, much to the advantage of the latter, for which he incurred the censures of the church, as the doctrine of the sun's immobility was looked upon as directly opposed to the express language of Scripture. Although Galileo professed to recant in order to obtain his liberation from prison, yet the system daily gained ground, and became at length established. Galileo besides made many accurate observations in astronomy, and was one of the first who, by improving the new invention of the telescope, was enabled to employ them in advancing his favourite science. By this means he is said to have discovered inequalities in the moon's surface, Jupiter's satellites, and the ring of Saturn; so likewise spots in the surface of the sun, by which he found out the revolution of that luminary on its own axis. He also ascertained what Pythagoras had conjectured, that the milky way and the nebulæ consisted of innumerable small stars. Harriot made similar discoveries in England at the same time, if not earlier. Hevelius, by means of his observations, formed a catalogue of fixed stars much more complete than that of Tycho's. Huygens and Cassini discovered the satellites of Saturn, and Sir Isaac Newton demonstrated, from physical considerations, the laws which regulated the motions of the heavenly bodies, and set bounds to the planetary orbs, determining their excursions from the sun, and their nearest approaches to him; he also explained the principle which occasioned that constant and regular proportion, observed both by the primary and secondary planets in their revolutions round their central bodies, and their distances compared with their periods. His theory of the moon, grounded on the laws of gravity and mechanics, has also been found to account for all her irregularities. Mr. Flamstead filled the office of Astronomer Royal at Greenwich from 1675 until his death in 1729, during which time he was constantly employed in making observations on the phenomena of the heavens. As the result of his labours, he published a catalogue of three thousand stars, with their places to the year 1689; also new solar tables, and a theory of the moon according to Horrox. On his tables was constructed Newton's theory of the moon, as also the tables of Dr. Halley, who succeeded him in his office in 1729. Besides composing tables

of the sun, moon, and planets, Dr. Halley added to the list of astronomical discoveries, being the first who discovered the acceleration of the moon's mean motion. He also contrived a method for finding her parallax by three observed places of a solar eclipse, and showed the use that might be made of the approaching transit of Venus in 1761, in determining the distance of the sun from the earth, and recommended the method of determining the longitude by the moon's distance from the sun and certain fixed stars, which was afterwards successfully adopted by Dr. Maskelyne, Astronomer Royal.

It was about this period that the question respecting the figure of the earth appears to have been satisfactorily decided, and in favour of Newton's theory. M. Cassini concluded, from the measurement of M. Picard, that it was an oblong spheroid, but Sir Isaac Newton, from a consideration of the laws of gravity, and the diurnal motion of the earth, had determined its figure to be that of an oblate spheroid flattened at the poles, and protuberant at the equator. To determine this point Louis XV. ordered two degrees of the meridian to be measured, one under or near the equator, the other as near as possible to the poles; the expedition to the north being intrusted to Messrs. Maupertuis and Clairaut, that to the south to Messrs. Condamine, Bouguer, and Don Ulloa. Among the many observations made by those who went on this expedition, it was found by those who went to the south that the attraction of the mountain of Peru had a sensible effect on the plumb lines of their large instruments, which is supposed to afford an experimental proof of the Newtonian doctrine of gravitation. A similar observation has since been made by Dr. Maskelyne on the mountain Schehallien in Scotland.

The eighteenth century was marked by the discoveries of Dr. Bradley, the successor to Dr. Halley as Astronomer Royal, and Dr. Herschel, who also filled the same post so honourably to himself. Dr. Bradley discovered the aberration of light, and the nutation of the earth's axis, besides having formed new and accurate tables of the motions of Jupiter's satellites, and the most correct table of refractions that is extant: also with a large transit instrument, and a new mural quadrant of eight feet radius, he made observations for determining the places of all the stars in the British catalogue, and likewise nearly a hundred and fifty places of the moon. Dr. Herschel, by augmenting the powers of the telescope beyond any thing existing before, or even thought of, succeeded in discovering a new planet, which he named the Georgium Sidus; he also discovered two additional satellites to Saturn, besides those of his own planet. Among those who cultivated the higher branches of the science, and distinguished themselves by their researches, Dr. Maskelyne, the predecessor of Dr. Herschel, ranks the foremost, having been the originator of the Nautical Almanack, and brought into use the lunar method of determining the longitude, &c. besides making the requisite tables. The theoretical part of the science was indebted to Clairaut, Euler, Simpson, de la Caille, Keil, Gregory, Leadbetter, for many correct observations and elucidations. The practical part acquired a systematic form and many improvements from the pens of Lalande, Ferguson, Emerson, Bonnycastle, Vince, &c. The historians of the science are Weilder, in his History of Astronomy; Baillie, in his History of Ancient and Modern Astronomy; Montuccla, in his Histoire des Mathématiques; and Lalande, in the first volume of his Astronomy.

The nineteenth century was commenced with the discovery of several new planets, namely, one in 1801 by M. Piazzi of Palermo, named Ceres, between Mars and Jupiter; another, named Pallas, discovered March 28, 1802, by Dr. Olbers, of Bremen; a third, named Juno, by Mr. Harding, at the observatory at Lilienthal, near Bremen, Sept. 1, 1804; and a fourth, named Vesta, by Dr. Olbers, March 29, 1807. These three last have also been observed to revolve between Mars and Jupiter.

ASYMPTOTE (in Conic Sections.) A line which approaches nearer to another continually, and never meets it. It is properly applied to straight lines approaching a curve.

ASYNDETON. A figure in grammar, when conjunctions are omitted in a sentence.

ATCHIEVEMENT (in Heraldry; vulgarly called HATCHMENT.) The arms of any family, with the ornaments appendant thereto, painted on canvass, and fixed to the dwelling house of a person deceased, to denote his death.

ATE. A termination of chymical words. See CHYMISTRY.

A TEMPO (in Music.) Italian for 'in time,' employed when the regular measure has been interrupted.

ATHANASIAN CREED. A formula of faith ascribed to St. Athanasius, which has been adopted into the liturgy of the church of England.

ATHEIST. One who denies the existence of God or a providence.

ATHWART. A sea term, signifying across the line of a ship's course.

ATLAS (in Geography.) A collection of maps; also the name of a chain of high mountains in Africa, extending from the coast of the Atlantic to the border of Egypt.

ATLAS (in Mythology.) One of the Titans, who is fabled to have borne heaven on his shoulders, and afterwards to have been metamorphosed into the mountain in Africa which bears his name. The origin of this fable is ascribed to Atlas, a king of Africa, who is supposed to have been addicted to the

study of astronomy. He is frequently represented bearing a globe on his shoulders.

ATLAS (in Commerce.) A satin manufactured in the East Indies.

ATMOSPHERE. That region of the air next to the earth, which receives the vapours and exhalations, and is terminated by the refraction of the sun's light; sometimes it signifies the whole ambient air.

The pressure of the atmosphere on the whole surface of the earth is said to be equivalent to that of a globe of lead of sixty miles in diameter. Admitting therefore the surface of a man's body to be about 15 square feet, and the pressure about 15 lb. on a square inch, it is computed that a man must sustain 32,400 lb., or nearly 14 tons and a half weight; but the difference in the weight sustained in different states of the atmosphere may be as much as a ton and a half. The density of the atmosphere is not the same in all parts; for it decreases in proportion to the height, and, as is supposed, in this proportion: that the density decreases in geometrical progression as the heights increase; whence the comparative density of the air at the several corresponding heights has been calculated as follows:

Height in Miles.	No. of times rarer.
0	1
3 and a half	2
7	4
14	16
21	64
28	256
35	1024

and pursuing this calculation, it has been computed that a cubic inch of the air we breathe would be so much rarefied at the height of 500 miles, that it would fill a sphere equal in diameter to the orbit of Saturn. The temperature of the atmosphere likewise diminishes as the distance from the earth increases, though, as it should seem, in a less ratio. M. de Saussure found that, by ascending from Genera to Chamouni, a height of 347 toises, Reaumer's thermometer fell 4 degrees 2 minutes, and that on ascending from thence to the top of Mount Blanc, 1941 toises, it fell 20 degrees 7 minutes.

ATMOSPHERE (in Electricity.) That sphere which surrounds the surface of electrified bodies, and is formed by the effluvia issuing from them.

ATMOSPHERIC STONES. The same as Aerolites, which see.

ATMOSPHERIC TIDES. Certain periodical changes in the atmosphere, similar to those of the ocean, and produced from nearly the same causes; of this description are the equinoctial winds.

ATOM. A part or particle of matter, so small as not to admit of farther subdivision. The Epicureans professed to account for the origin and formation of all things, by supposing that these atoms were endued with gravity and motion, and thus came together into the different organized bodies we now see. This was called the atomical philosophy, which was adopted by the sceptics and infidels of those times.

ATOMIC THEORY. A species of philosophy recently introduced into chymistry, and grounded on the axiom that 'chymical union consists in the combination of the atoms of bodies with each other;' so that when two bodies chymically unite and form a third body, the two substances united are dispersed every where through the new compound. Thus, for instance, saltpetre is a compound of nitric acid and potash; and if we examine even so small a portion of this salt as the hundredth part of a grain, it will be found to be compounded of these two substances, nitric acid and potash; and if any part of it wanted these constituents, it could not be saltpetre.

ATROPA, or DEADLY NIGHTSHADE. Children are often killed by eating its berries, which are of a fine black colour, and about the size of a small cherry. The root is perennial, with stalks of a purplish colour, and the flowers are bell-shaped, dusky on the outside, and purplish within. The fruit has a nauseous, sweet taste.

ATROPHY. A disease, a kind of consumption, where the body is not nourished by food but decays and wastes away insensibly.

ATROPOS. One of the three destinies, who, as the poets feign, cuts the thread of life

ATTACHMENT. The taking of goods, or body and goods, under legal process.

ATTAINDER. The name of a law, by which the estate and life of a traitor are forfeited.

ATTIC (in Architecture.) A sort of building, in which there is no roof or covering to be seen, as was usual in the houses of the Athenians. The attic, or attic story, is the upper story of a house.

ATTITUDE (in Painting.) The gesture of a figure, serving to express the action and sentiments of the person represented.

ATTORNEY. One who is appointed by another to do a thing in his absence. A public attorney is one who acts in the courts of law, and is a lawyer by profession: a private attorney acts upon particular occasions, and is authorized by a letter of attorney, which gives one full power to act for another.

ATTORNEY GENERAL. A law officer, appointed to manage all affairs of government, either in criminal prosecutions or otherwise.

ATTRACTION. In a general sense, the power or principle by which bodies mutually tend towards each other, which varies according to the nature of the bodies attracted, and the circumstances under which this attraction takes place; whence attraction is distinguished into the Attraction of Cohesion, Attraction of Gravitation, Attraction of Electricity, Attraction of Magnetism, and Chymical Attraction.

The ATTRACTION OF COHESION is that by which the minute particles of bodies are held together.

ATTRACTION OF GRAVITATION is the principle by which bodies at a distance tend to each other; on this principle it is that two leaden balls, having each a smooth surface, if compressed strongly together, will cohere almost as strongly as if united by fusion; and even two plates of glass, if the surfaces are dry and even, will cohere so as to require a certain force to separate them; which is supposed to be a universal principle in nature. By gravitation, a stone and all heavy bodies, if let fall from a height, are supposed to drop to the earth. All celestial bodies are supposed to have not only an attraction or gravitation towards their proper centres, but that they mutually attract each other within their sphere. The planets tend towards the sun and towards each other, as the sun does towards them. The satellites of Jupiter tend towards Jupiter, as Jupiter does towards his satellites; and the same with the satellites of Saturn and of Uranus. The earth and moon tend likewise reciprocally towards each. By this same principle of gravity heavenly bodies are kept in their orbits, and terrestrial bodies tend, as is supposed, towards the centre of the earth. From this attraction all the motion, and consequently all the changes in the universe, are supposed to arise, the rains fall, rivers glide, oceans swell, projectiles are directed, and the air presses upon different bodies.

ATTRACTION OF MAGNETISM is the particular tendency of certain bodies to each other, as that of the magnet, which attracts iron to itself. This is only a sort of attraction of gravitation, acting on particular substances.

ATTRACTION OF ELECTRICITY is the principle by which bodies, when excited by friction, tend towards each other. This species of attraction agrees with that of gravitation in the property of acting upon bodies at a distance; but it differs from it inasmuch as these bodies require to be in a particular state in order to be acted upon.

CHYMICAL ATTRACTION is that disposition which some bodies in solution indicate to unite with some substances in preference to others. This is otherwise called affinity, and is considered as a sort of attraction of cohesion, acting in an unresisting medium, as it applies peculiarly to such bodies as, in solution, indicate a disposition to unite with some substances in preference to others.

ATTRIBUTES. Those properties or perfections which are attributed to the Divine Being only, as his self-existence, immutability, eternity, &c.

ATTRIBUTES (in Logic.) The predicates of any subject, or that which may be affirmed or denied of a thing, as 'man is an animal,' 'man is not a brute.'

ATTRIBUTES (in Painting and Sculpture.) Symbols added to certain figures, to denote their office or character, as the eagle added to the figure of Jupiter, to denote his power; a club to Hercules, to denote his prowess, &c.

AVALANCHES. A name given in Savoy and Switzerland to the masses of snow which break off from the mountains with a noise like thunder, and sometimes overwhelm whole villages.

AVAST. A term of command at sea, signifying hold, stop, stay.

AUCTION. A public sale of goods by persons called auctioneers, who are licensed to dispose of goods to the highest bidder on certain conditions, called the conditions of sale. A mock auction is that which is conducted by unlicensed persons for fraudulent purposes.

AUDIENCE. The ceremony of admitting ambassadors and public ministers to a hearing at court.

AUDIT. A regular examination of accounts by persons duly appointed.

AUDITOR. An officer of any public body, appointed annually to examine accounts.

AVE-MARIA. A prayer used by the Romish church, which was so called, because it consists of the first words addressed by the angel Gabriel in his salutation to the Virgin Mary.

AVENUE. A walk planted on each side with trees before a house, or as a passage to any place.

AVERAGE (in Commerce.) The damage which a vessel, with the goods or lading, sustains from the time of its departure to its return; also the charges or contribution towards defraying such damages, and the quota or proportion which each merchant or proprietor is adjudged, upon a reasonable estimate, to contribute to a common average.

AVES. Birds; the second class of animals

in the Linnæan system. This class of animals is distinguished from all others by several peculiarities in their form, having feathers for their covering, two feet, and two wings formed for flight. They have, for the most part, the mandible protracted and naked, but are without external ears, lips, teeth, scrotum, womb, urinary vessel, or bladder, epiglotis, corpus callosum, or its fornix and diaphragm. They produce their young by eggs, and their nests are curious and beautiful. They are divided in the Linnæan system into six orders: namely, Accipitres, or the falcon and eagle kind; Picæ, the pies; Anseres, the goose and duck kind; Grallæ, the crane kind; Gallinæ, the poultry or domestic fowl; and Passeres, the sparrow and finch kind, with all the smaller birds.

AUGER. A wimble, or carpenter's tool for boring holes.

AUGMENT (in Grammar.) A letter or syllable added or changed in Greek verbs.

AUGMENTATION (in Heraldry.) A particular mark of honour borne in an escutcheon, as the hand in the arms of baronets.

AUGURY. The practice of divining by the flight of birds, or from inspecting their entrails. The augurs were a principal order of priests among the Romans.

AUGUST. The eighth month of the year, called after the emperor Augustus Cæsar, who entered his second consulship in that month, after the Actian victory. It was previously called Sexatilis.

AUGUSTAN CONFESSION. A confession or declaration of Christian faith made by the Protestants at Augusta or Augsburg, in Germany, A. D. 1550.

AUGUSTINES, or Austin Friars. A religious order, so called from St. Augustin, their founder. They were very numerous in England before the Reformation.

AVIARY. A place set apart for feeding and propagating birds.

AVOIRDUPOIS. A sort of weight used in England and America, of which the pound consists of 16 ounces. The proportion of a pound avoirdupois to a pound troy is as 17 to 14.

AVOSET. A bird of the size of the lapwing, with very long legs, and the feathers variegated with black and white; the bill is long, flexible, and bent upwards towards the tip. It is found in Europe and America.

AUK. A bird, otherwise called Penguin or Razorbill, an inhabitant of the arctic or northern seas.

AURELIA. That intermediate state in which many insects remain for some time, between the caterpillar form and the period in which they are furnished with wings, antennæ, and other organs appertaining to the perfect insect.

AURICLE. That part of the ear which is prominent from the head. The auricles of the heart are appendages at the base of the heart, which are distinguished into right and left, the former of which is placed in the anterior, the latter in the hinder part. These are muscular bags, which move regularly with the heart, but in an inverted order.

AURICULAR CONFESSION. A mode of confession among Roman Catholics, by whispering in the ears of their fathers, confessors, or priests.

AURORA BOREALIS, i. e. the Northern Twilight. We often see in the north, near the horizon, usually a short time after sunset, a dark segment of a circle, surrounded by a brilliant arch of white or fiery light; and this arch is often separated into several concentric arches, leaving the dark segment visible between them. From these arches, and from the dark segment itself, in high latitudes, columns of light, of the most variegated and beautiful colours, shoot up towards the zenith; and sometimes masses, like sheaves of light,

are scattered in all directions. The appearance is then splendid; and its increasing beauty is announced by a general undulation of the masses of light. A kind of fiery coronet is afterwards formed about the zenith, by the meeting of all the columns of light, resembling the knob of a tent. At this moment, the spectacle is magnificent, both for the multiplicity and beauty of the columns which the aurora presents.

A similar appearance, *aurora australis*, was seen about the south pole, in 1773, by Cook's sailors, between 53° and 60° South latitude; and later travellers have observed the same. These phenomena ought, therefore, properly to be called *polar lights*. Philosophers are of different opinions as to the cause of the aurora. It is, however, satisfactorily ascertained to be within the region of our atmosphere, and is most probably occasioned by electricity.

AURUM MUSICUM, or MOSAICUM. A combination of tin and sulphur, used by statuaries and painters, for giving a gold colour to their figures.

AUSPICES. A kind of soothsaying among the Romans, by the flight or singing of birds.

AUTO DA FE, or AN ACT OF FAITH. The solemn act of punishing heretics, formerly in use among the Spaniards. Upon a Sunday or festival, the offender being brought from prison to church, dressed in a frightful manner, attended divine service, after which he was delivered over to the civil power to be burnt.

AUSTRIAN. A native of an extensive and powerful empire in Europe, containing about 30 millions of inhabitants, Vienna being the capital. The soil is fertile, and the climate mild and healthy. It abounds in minerals. The nobility are proud, ignorant, and oppressive to their inferiors; but the lower classes, industrious and moral.

AUTOGRAPH. An epithet applied to whatever is written in a person's own handwriting, as an autograph letter, a letter of one's own writing.

AUTOMATON. A self-moving engine, more particularly the figure of any animal having the principle of motion within itself by means of wheels, springs, and weights; those in the figure of a man are called androides, as the mechanical chess-player, &c. (see ANDROIDES;) those of animals are properly called automata. It is said that Archytas of Tarentum, 400 years before Christ, made a wooden pigeon that could fly; and that Archimedes made similar automata. Regiomontanus made a wooden eagle, that flew forth from the city, met the emperor, saluted him, and returned; also an iron fly, which flew out of his hand at a feast, and returned again, after flying about the room. Dr. Hooke made the model of a flying chariot, capable of supporting itself in the air. M. Vaucanson made a figure that played on the flute; also a duck capable of eating, drinking, and imitating exactly the voice of a natural one; and, what is still more surprising, the food it swallowed was evacuated in a digested state; also the wings, viscera, and bones, were formed so as strongly to resemble those of a living duck. M. le Droz, of la Chaux de Fonds, presented a clock to the king of Spain, which had, among other curiosities, a sheep that made a bleating noise, and a dog watching a basket, that snarled and barked when any one offered to take it away.

AUTUMN. The season between summer and winter, when the fruits of the earth ripen, and the days and heat diminish. In the northern hemisphere, September, October, and November, are the autumnal months; and in the southern hemisphere, March, April, and May.

AUXILIARY VERBS (in Grammar.) Such verbs as help to form or conjugate others, as, in English, the verbs 'to have,' and 'to be.'

AWL. A shoemaker's tool, with which holes are bored in the leather, for the admission of the thread in stitching and sewing. The blade of the awl is mostly a little flattened and bent.

AWNING. A piece of tarpaulin or sail, &c. hung about the decks or any other part of a vessel, to screen persons from the sun and rain.

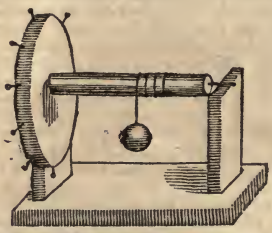
AXIOM. A self-evident truth; or a proposition, the truth of which is perceived at first sight. Thus, that a whole is greater than a part; that a thing cannot be and not be, at the same time; and that from nothing, nothing can arise, are self-evident truths, or axioms. An axiom is also an established principle in some art or science. Thus, it is an axiom in geometry, that things which are equal to the same things, are equal to each other; that, if to equal things equal things be added, the wholes will be equal, &c.

AXIS (in Geometry.) A right line conceived to be drawn from the vortex of a figure to the middle of the base. It is so called because the

figure, by revolving round this line, is conceived to generate a solid. The axis of a circle is the same as the diameter.

AXIS (in Mechanics.) A certain line, about which a body may move, as the axis of a balance, &c.

AXIS IN PERITROCHIO, or WHEEL AND AXLE. One of the five mechanical powers or simple machines, which is principally used in the raising of water.



AXIS (in Astronomy,) or AXIS OF THE SPHERE. An imaginary right line conceived to pass through the centre of the earth from one pole to the other. The sun and all the planets are each conceived to revolve about their respective axes. That of the earth during its revolution round the sun remains parallel to itself, inclined to the plane of the ecliptic in an angle of 66 degrees and a half.

AXLE, or AXLE-TREE. The piece of wood which passes through the middle of any wheel, and on which it turns.

AZIMUTH. An arch of the horizon, intercepted between the meridian of the place and the azimuth or vertical circle passing through the centre of the object.

AZIMUTH CIRCLES, or VERTICAL CIRCLES. Imaginary great circles passing through the zenith and nadir, and cutting the horizon at right angles.

AZIMUTH COMPASS. An instrument for finding in a more accurate manner than by the common sea compass, the magnetical amplitude or azimuth of the sun or stars.

AZIMUTH, MAGNETICAL. An arc of the horizon, intercepted between the vertical circle passing through the centre of any heavenly body and the magnetical meridian.

AZOTE, or NITROGEN (in Chymistry.) A simple substance, which, though not perceptible to the senses, is known to exist, by observing its passage from one combination to another, and tracing the laws of chymical attraction to which it is subject. It is the radical principle of atmospheric air, which contains nearly four-fifths of it in bulk, and three-fourths in weight; it also forms a part of nitric acid, ammoniac, and other substances. Its most remarkable combination is that which it enters into with light and caloric, so as to form the compound well known by the name of nitrogen gas, or azotic gas.

AZURE (among Painters.) The beautiful blue colour, with a greenish cast, prepared from the Lapis Lazuli, generally called Ultramarine.

AZURE (in Heraldry.) The blue colour in the coats of arms of all persons under the degree of barons. In engraving, the azure is represented by horizontal lines across the shield from side to side.

B.

B, the second letter of the alphabet, is often used as an abbreviation for Bachelor, as B. A. Bachelor of Arts, B. D. Bachelor of Divinity, &c. It is the first consonant, and first mute, and its pronunciation is supposed to resemble the bleating of a sheep. B is also one of those letters which are called labial, because the principal organs employed in its pronunciation are the lips. It is pronounced by pressing the whole length of them together, and forcing them open with a strong breath. B as a numeral among the Romans stood for 300, and with a dash over it thus, $\overline{B}$, for 3000. B, in chronology, stands for one of the Dominical letters, and in music for the seventh note in the gamut.

BAAL. The name of an idol in the Chaldaic language, whom the priests personified in their temple by a figure like that of Mars. These statues, in different temples, were represented by the priests as working local miracles, so local additions were made to the name Baal, as Baal-Berith, Baal-Peor, Baal-zebub, or Belzebub, &c.

BABEL (TOWER OF.) A square pyramidal tower, half a mile round, and the eighth of a mile high, with a winding passage on the outside, broad enough to admit carriages to pass, and at the top of it was an astronomical observatory. Its remains are still visible, and called the tower of Nimrod.

BABOON. A large kind of ape with a short

tail, which forms one division of the genus Simia in the Linnæan system.

BACCHANALIANS. Those who performed the rites at the Bacchanals in honour of Bacchus.

BACCHANALS. A festival at Rome in honour of Bacchus, which, for their licentiousness, were suppressed by a solemn decree of the senate.

BACCHUS. The god of wine in the heathen mythology, was the son of Jupiter and Semele. He was the Osiris of the Egyptians, from whom the fables respecting him were taken by the Greeks.

BACCIFERÆ. Berry-bearing plants.

BACHELOR. One of the first degrees in the liberal arts conferred at universities.

BACKGAMMON. A particular game played by two persons with the help of dice, on a board or table divided into parts, whereon are twenty-four black and white spaces called points.

BACKPAINTING. The method of painting mezzotinto prints pasted on glass, with oil colours.

BACKSTAFF. An instrument formerly used in taking the sun's altitude. It was so called because the back of the observer is turned towards the sun when he makes the observation. This quadrant is now superseded by more accurate instruments.

BADGE. An exterior ornament of a coat of arms, originally worn by the retainers or attendants of the nobility. It fell into disuse in the reign of Queen Elizabeth.

BADGER, an inoffensive quadruped, found in wild parts of Britain, with small eyes, short ears, short thick neck, and very short thick legs. It feeds on insects or berries, burrows during winter, hunts by night, and lies concealed by day.

BAGNIO. Italian for a bathing house, with conveniences for bathing, sweating, and otherwise cleansing the body.

BAGPIPE. A favourite wind instrument among the Highlanders. It consists of two parts; namely, a leathern bag, and pipes for admitting and ejecting the air. One of the pipes called the drone, with which the base part is played, never varies its tone. The third pipe is played on by compressing the bag under the arm.

BAIL (in Law.) Sureties given for the appearance, when required, of a person in custody. Common Bail is in common concernment, where any sureties may be taken; but Special Bail is in matters of greater importance, where special surety of two or more persons must be taken according to the value of the cause.

BAILEE (in Law.) The person to whom the goods of the one that is bailed are delivered.

BAILIFF. A subordinate magistrate or officer appointed within a particular province or district. Sheriff's bailiffs, in England, are

officers appointed by the sheriff to execute writs. These, being bound in bond to the sheriff for the due execution of their office, are called bound bailiffs, vulgarly bum-bailiffs.

BAILIWICK. Any district wherein a bailiff has a jurisdiction.

BAILMENT. The delivery of goods in trust upon a contract expressed or implied.

BALÆNA. The whale; a genus of the class Mammalia, and of the order Ceti.

BALANCE. One of the simple powers in mechanics, which serves to find out the equality or difference of weight in heavy bodies. It is a peculiar application of the lever to this particular purpose. The common balance consists of a lever with equal arms, at the extremity of each of which is attached a scale. Before loading it with any weights, the whole ought to preserve a perfect equilibrium; and this equilibrium must arise from an exact distribution of the weight of each arm and scale of the balance, as well as from the equal length of the former; for on this depends the correctness of its action. The Assay-Balance is a very delicate kind of balance, used for determining the exact weight of minute bodies. It is so called because it is particularly used in the different processes of assaying; it is also frequently used in chymical analysis. Balances also vary in their form, as the Bent-Lever Balance, the Compound Balance, consisting of a combination of balances used in weighing very heavy bodies; also the Danish Balance, a kind of steel-yard.

BALANCE OF TRADE. A term in commerce, denoting the equality between the value of the commodities bought of foreigners, and the value of the native productions transported into other countries. Balance in a merchant's account is when the debtor and creditor account are made even.

BALE (in Commerce.) A quantity of merchandise packed up in cloth.

BALISTER, or FILE-FISH. A fish so called from the resemblance of its backbone to a file. It is remarkable for the brilliancy of its colours.

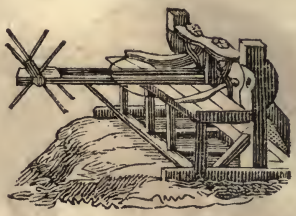
BALL, in a general sense, is a round or spherical body, whether formed by nature or art. Thus, the terraqueous globe which we inhabit, appears to have assumed that form, in consequence of the revolution round its own axis, not unlike a mass of clay, when turned in a circular direction.

BALL AND SOCKET. An instrument of brass with a perpetual screw, constructed to move in any direction. It is used in the management of surveying and astronomical instruments.

BALLAST. Gravel, sand, or any weighty matter, put into a ship's hold, to poise her and bring her sufficiently low in the water.

BALLET. A theatrical representation, consisting of music and dancing.

BALLISTA. A warlike engine used by the ancients in besieging cities, to throw large stones, darts, and javelins.



BALLOON. A globe commonly made of lutestring, and covered with an elastic varnish, to render the substance impervious by the gas. When filled with hydrogen gas, from ten to thirteen times lighter than atmospheric air, the balloon will ascend, and convey heavy bodies suspended to it. The weight which the balloon is capable of raising will be in proportion to the diameter of the sphere. From experiments it has been found that a cubic foot of hydrogen gas will raise about one ounce avoirdupois. The first balloon ascended at Paris, in 1782

BALLOT. A little ball; also the manner of giving votes at an election by putting little balls, black or white, or slips of paper, into a box.

BALM, or BALSAM. A liquid resin of a whitish or yellow colour, a fragrant smell, and a penetrating aromatic taste. It flows from the balsam tree, and is much used by the females in Turkey as a cosmetic.

BALM, or BALM MINT. A perennial, so called from the fragrance of its smell, which resembles that of balsam.

BALSAM TREE. A tree growing in Arabia and Egypt, the bark of which yields the balm or balsam abovementioned.

BALSAMICS. Softening, healing, and cleansing medicines.

BALUSTRADE. A series or row of balusters or small pillars, serving as a guard or fence to balconies or staircases.

BALTIMORE ORIOLE. A bird of North America, which suspends its nest to the horizontal forks of the tulip and poplar trees, formed of the filaments of tough plants; it is of a pear shape, open at top, with a hole on the side, through which the young are fed, &c. Some other birds build their nests in like manner, as the bottle-nested sparrow, &c.

BAMBOO, or BAMBU. An Indian reed with larger knots than the common reed. The poorer inhabitants of India make their dwellings of this reed; paper is also made of the same material, by bruising it, and steeping it in water until it be reduced to a paste.

BANANA, or PLANTAIN. An invaluable tropical fruit-tree. It serves the Indians for bread, and grows to the height of 15 or 20 feet. At the top of the stalk, leaves expand from six to eight feet long, and two to three feet broad, which grow so quick that their expansion may be almost discerned. The flower forms a spike in the centre, often nearly four feet long, and nodding on one side. The fruit, or plantains are twelve inches long and two inches in diameter, at first green, and afterwards of a pale yellow. The spikes of fruit weigh from 30 to 40 pounds. They are generally cut before ripe, the green stud pulled off, and the heart roasted, and served at table as bread. The negroes almost live upon them, and they serve, likewise, to fatten all domestic animals. Every other part of the tree is useful, and the leaves are used as napkins and table-cloths. Of another sort, the fruit is rounded and more luscious, and, when ripe, eaten raw or fried in slices, and is relished by all ranks in the West Indies. It is only perennial in its roots, for the stalk dies down to the ground every year; but, by cutting them down, suckers rise from the root, and there is a constant succession of fruit all the year.

BAND (in Architecture.) Any flat, low member or moulding, which is broad but not deep.

BANDANA HANDKERCHIEFS. A kind of silk handkerchiefs manufactured in India, of silk and cotton.

BANDITTI. A band of outlawed robbers.

BANDOLEER, or BANDOLIER. A large leathern belt, formerly worn over the right shoulder, and hanging under the left arm, to carry some warlike weapon.

BANDROL. A little flag or streamer.

BANERET. A knight made in the field, whose standard was converted into a banner which he could display in the king's army as the barons did.

BANGUE, a species of opiate, in great use throughout the east, for drowning care and inspiring joy; is extracted from a kind of wild hemp that grows in countries of the Levant. The leaves are dried in the shade, ground to powder, and made into pills or conserves, or taken as a powder. The Turks take this deleterious drug and opium as substitutes for wine, which is forbidden by the Koran to all true Mussulmans.

BANIAN-TREE, one of the greatest wonders of the vegetable kingdom. For many centuries it continually extends itself; for every branch shoots downward, and, striking into the ground, becomes itself a parent tree, whose branches, in like manner, spread. One of them, the Cubbeer Burr, has 350 stems, equal to large oaks, and more than 3000 smaller ones, covering space sufficient to shelter 7000 persons. Its branches are crowded with families of monkeys, and with birds of every description, and also with enormous bats, all of which find luxurious subsistence on the

rich scarlet figs that grow upon it. The common fig-tree, and the sycamore of Scripture, is of the same species, and the wood of the latter is almost imperishable.

BANISHMENT. A quitting the realm, either voluntarily, as by abjuration; or compulsorily, as by transportation.

BANK (in Commerce.) An establishment for the receiving of moneys, and letting them out on interest. Banks, like most commercial institutions, originated in Italy, where, in the infancy of European commerce, the Jews were wont to assemble in the market places of the principal towns, seated on benches, ready to lend money; and the term bank is derived from the Italian word banco, (bench.) Banks are of three kinds, viz.: of deposite, of discount, and of circulation. In some cases, all these functions are exercised by the same establishment; sometimes two of them; and in other instances, only one of them. The first bank was established at Venice about 1157, and the name of Banco was given to it in Italian, from the bench which the money-changers or bankers used to sit upon in their courses or exchanges. The bank of Genoa was established in 1345; that of Amsterdam, in 1609; that of Hamburgh, in 1619; that of Rotterdam, in 1635. The Bank of England, one of the last, but at present the greatest of its kind, was established by charter in the reign of William and Mary, into a corporate body, by the title of the Governor and Company of the Bank of England. Its notes form the currency of the kingdom to a certain extent, and amount to between twenty and thirty millions. The Bank of England is also the Government Bank, and pays the interest of the national debt. The present bank of the United States was chartered in 1816, with a capital of 35 millions of dollars. In January, 1829, it had 21 branches in different parts of the Union, and its general concerns were highly prosperous. There are about 400 other banking companies in the United States, incorporated by state legislatures. About seven eighths of these have capital and credit, and business: the other one eighth are either broken or of doubtful standing. Public and private banks are now very common in most civilized countries.

BANKER. A person who traffics in money, by receiving the current cash of individuals free of interest, and negotiating with it, either in the discount of bills or the advance of money on sufficient securities.

BANKING-HOUSE. Any mercantile house which carries on the business of a private banker, as distinguished from a Bank.

BANKRUPT. A trader who fails or breaks, so as to be unable to carry on his business or pay his debts. In Law, a bankrupt is one who has committed an act of bankruptcy, so as to bring him under the protection of the bankrupt laws, which is allowed to none but actual traders, or such as buy and sell, and gain a livelihood by so doing. It is derived from banchum, a bench, and rumpere, to break, because the bench of the Italian banker or money-changer is said to have been broken by way of infamy, when he failed.

BANNER. A decorated piece of cloth fastened to a pole or lance.

BANNIANS. A religious sect among the Hindoos, who believe in the transmigration of souls, and therefore abstain from eating the flesh of animals, which they carefully preserve. They are so cautious of having communication with any but their own caste, that if any of another nation or tribe has drunk out of or touched their cup, they break it.

BANNOCK. A sort of oaten cake used in the north of England, baked in the embers or on a hot stone.

BANNS OF MATRIMONY. The publishing of marriage contracts before the performance of the marriage ceremony. In some churches, when persons are to be married, the banns of matrimony are published in the church where they dwell three several Sundays or holidays in the time of Divine Service; and if, at the day appointed for their marriage, any man do allege any impediment, or precontract, consanguinity or affinity, want of parent's consent, infancy, &c. why they should not be married, (and become bound with sureties to prove this allegation,) then the solemnization must be deferred until the truth is tried.

BANTAM. The name of a domestic fowl of the hen tribe, having short legs, and the shanks well feathered.

BAPTISM. A sacrament of the Christian church, administered either by immersion, that is, dipping in water, or by sprinkling with water, as is practised in the church of England.

BAR (in Courts of Law.) The place parted off by a bar or railing, within which sergeants and counsellors stand to plead; also the profession of a barrister or pleader.

BAR. A sea term for a rock lying before the harbour in such a manner that ships cannot sail over except upon the flood.

BAR (in Music.) A line which divides the notes into equal portions in respect to their duration.

BAR (in Heraldry.) One of the honourable ordinaries, consisting of two horizontal lines drawn across the escutcheon.

BARALIPTON. An arbitrary name among logicians, for an indirect mode of the first figure of syllogisms.

BARATRY (in Commerce.) A term used when the master of a vessel or the mariners cheat the owners by embezzling their goods, or running away with the ship.

BARB. Any roughness that grows and resembles a beard; as the down with which the surface of some plants is covered; the tuft of hairs at the point of leaves; the armour for horses in warfare; and the points which are backward at the tip of an arrow; also, the name of a horse of the Barbary breed, remarkable for its swiftness.

BARBARA. An arbitrary name among logicians for the first mode of the first figure of syllogisms, consisting of three universal propositions: as, 'all animals are endued with sense; all men are animals; ergo, all men are endued with sense.'

BARBARISM. A method of employing language different to that of accredited writers.

BARBEL. A fish of the carp kind, which lies in holes near the banks, and feeds on testaceous animals, worms, &c. It has its name from the beards or wattles under its nose. This genus is composed of thirty-one species, which are principally distinguished by the number of rays in the ventral fin: their general characters are, a toothless mouth, three rays in the gills; a smooth and white body; and the belly fins have frequently nine rays.

BARBER. One who follows the trade of shaving and dressing hair, and anciently also that of bleeding, whence barbers were called Barber-Chirurgeons, and used a pole as a sign to represent the staff which persons used to hold when they were bled. The barbers were separated from the surgeons by a statute in the reign of George the Second.

BARBERRY. A tart berry, the fruit of the barberry tree; a prickly shrub.

BARBICAN. An outer defence or fortification to a city or castle, used as a fence, and also as a watchtower, to descry the approach of an enemy.

BARD. The name given to those individuals of semi-barbarous tribes, whose genius or imaginations enabled them to describe events in elevated or measured language. Homer was one of these bards among the early Greeks; Ossian another among the ancient Irish; and their rhapsodies were the foundations of the art of poetry, which has been cultivated with success by all civilized nations.

BARGAIN AND SALE (in Law.) An instrument whereby the property of lands and tenements is, for valuable consideration, transferred from one person to another. It is called a real contract upon a valuable consideration for passing of lands, tenements, and hereditaments, by deed indented and enrolled.

BARGE. A very large boat used on rivers, either for pleasure or for trade.

BARILLA. A kind of Spanish alkaline salt, used in the glass trade.

BARITONO. A low pitch of the voice between base and tenor.

BARIUM. A metal so called by Sir H. Davy, the discoverer, which is obtained by the chymical decomposition of barytes.

BARK. The skin or covering of a ligneous plant. Bark-binding is a disease in trees cured by slitting the bark.

BARK (in Commerce.) A stuff manufactured in India of the bark of trees; also the Peruvian or Jesuit's bark, which is procured from the Cinchona tree growing in Quito.

BARK. A sea term for a small vessel, particularly one carrying three masts.

BARLEY. A sort of corn or grain which is sown in March, April, or May, and succeeds best in light dry soils. From barley, when converted into malt, beer is made.

BARLEY, or PEARL-BARLEY. Barley stripped of its first coat, and used in making a diet drink.

BARLEYCORN. The least of our long measures, being the third of an inch.

BARM, or YEST. Glutinous froth, which is disengaged from fermented liquor, while carbonic acid gas is escaping.

BARN. A storehouse for grain, in which it is deposited and thrashed.

BARNACLE. A species of shell-fish which sticks to the bottom of ships, rocks, &c.

BARNACLE-GOOSE. A large waterfowl, with a broad flat bill.

BARN-FOWL, were originally natives of Persia, and were imported into Europe many centuries ago: they seem to have been some of the first animals attendant upon man. No animal has greater courage than the male when

opposed to one of his own species; and the brutal diversion of cock-fighting is a favourite sport, wherever refinement and polished manners have not entirely taken place. The

female, if well supplied with food and water, will lay about two hundred eggs in a year; when attending her brood, nothing can exceed her patience, courage, and affection.

BAROLITE. A stone of the ponderous order, called also the carbonite of barytes.

BAROMETER. An instrument for measuring the weight of the atmosphere, invented by Torricelli. The common barometer is a glass tube hermetically sealed at one end, and filled with mercury, so as to have no air over. Then the maker, putting his finger on the open end, immerses it in a basin of quicksilver or water; and on his removing his finger, the quicksilver in the tube endeavours, by its own weight, to descend into the basin, but by the pressure of the external air on the surface of the fluid in the basin, and no air being in the tube at the top, the quicksilver will rise from 28 to 31 inches in mercury, and from 30 to 33 inches in water. In dry weather, the air, being free from vapours, is consequently heavy, and presses up the quicksilver; but in moist rainy weather, the atmosphere being charged with clouds and fogs, the air is lighter, and gresses with less force on the quicksilver. In high winds the atmosphere is light, and the quicksilver low; it also rises higher in cold weather than in warm.

BARON. A degree of nobility next to a viscount. All barons in England are lords of parliament and peers of the realm. Barons were originally so by tenure, that is, by virtue of the barony annexed to their lands or office.

BARON AND FEME. A term in law for husband and wife, who are deemed but one person.

BARON'S CORONET. On a gold circle six pearls, which were assigned to barons by King Charles II., after the Restoration.

BARONET. The lowest degree of hereditary honour created by letters patent. It was founded by James I. of England, in 1604.

BARONS OF THE EXCHEQUER. The four judges who officiate in the court of exchequer at Westminster.

BARONY. The honour and territory which gave title to a baron, including the fees and lands of lords, both temporal and spiritual.

BARRACKS. Places erected for the accommodation of both men and horses in armies.

BARRAS. A substance consisting of resin and oil, which exudes from the wounds of fir trees in winter.

BARRATOR (in Law.) A common mover of suits and quarrels, either in courts or elsewhere.

BARREL. A cask or vessel for holding liquor, that is, thirty-one and a half gallons of wine, &c. and thirty-two gallons of beer.

BARREL. The cylinder of a watch, about which the spring is wrapped.

BARRIER. A kind of fence, composed of great stakes, and serving to defend the entrance of a passage.

BARRISTER. A person qualified and empowered to plead and defend the causes of clients in courts of justice.

BARROW (in Husbandry.) An implement of conveyance with a single wheel, and driven with the hand. It is made of different forms, according to the purpose for which it is intended.

BARROWS. A mound of earth raised over the dead, of which graves are imitations, and of which the pyramids of Egypt were a magnificent variety. They abound in many parts of England, particularly in Wiltshire, and near Marlborough; one of them, called Silbury Hill, is nearly as large as the smallest pyramid of Geza. When opened, they are found to contain bones and relics.

BARTER. The exchanging of one commodity for another. Barter was the original and natural way of commerce, there being no buying till money was invented, and used in exchanging; also, the rule in Arithmetic by which the proportionate value of commodities is found.

BARYTES. A sort of ponderous earth, very brittle, and perfectly soluble in boiling sulphuric acid. It is compounded of oxygen and barium.

BASALT. A sort of argillaceous earth, consisting of silica, with a certain portion of alumina and oxide of iron, lime, and magnesia. It is always found near volcanoes. Columns of basalt form the Giant's Causeway, the Isle of Staffa, and Fingal's Cave, and are always found near great volcanoes, as Etna, Hecla, &c.

BASE (in Architecture.) The foot of a pillar, by which it is sustained; in Geometry, the base of a figure is the lowest plane side, or that on which it stands.

BASE (in Chymistry.) The inert substance which combines with and is acted upon by the more volatile and active menstrua, as the alkalies, earths, and metallic oxides, which are the principal ingredients in the formation of salts.

BASE LINE (in Perspective.) The common section of a picture, and the geometrical plane.

BASEMENT. A continued base extended along any building, as the basement or lower story of a house.

BASE TENURE, or BASE ESTATE (in Law.) A holding by villenage, or other customary service.

BASHAW, or PACHA. The title given to the grand officers of the court at Constantinople; as the capudan bashaw, the admiral or commander at sea; bostangi bashaw, the chief officer of the garden, &c. Their degrees of dignity were marked by their bearing one, two, or three horses' tails.

BASIL. The sloping edge of a chisel, or of the iron of a plane.

BASIL. A plant which has an aromatic smell.

BASILICON. An ointment, consisting of resin, pitch, oil, wax, &c.

BASILISK. A serpent of the lizard tribe, with remarkably piercing eyes, and a white spot on its head, resembling a diamond. It was formerly called a cockatrice, and fabled to be produced from the eggs of a cock.

BASIN. Any hollow place capable of holding liquids. Basin of a dock, a place where the water is confined by double flood-gates. The basin of a haven is that part which opens from a narrow passage into a spacious receptacle.

BASKET. A vessel made either of rushes, splinters, willows, osiers, or any other flexible material that can be interwoven. To render osiers fit for use, they must be soaked for some time. Those that are intended for the finer kind of work, as washing-baskets or market-baskets, and the like, must be peeled while they are green, and then steeped. Hampers, and the coarser kind of work, do not require that preparation: basket making was one of the arts that was carried to a considerable degree of perfection among the ancient Britons.

BASKING SHARK. A species of the shark, which lies much on the surface of the water, basking in the sun. It grows to a prodigious size, but is not very fierce.

BAS-RELIEF. See BASSO RELIEVO.

BASS (in Music.) The lowest or deepest part of any composition. This note is played on the largest pipes or strings of instruments of the common size, as the organ, lute, &c. or on the largest kind of instruments. The bass is the principal part of a musical composition, and the foundation of harmony, whence it is called the fundamental bass. Thorough bass is that which includes the fundamental rules of composition. Ground bass is that which commences with some subject of its own, that is continually repeated throughout the movement, whilst the upper parts pursue a separate air.

BASS CLIFF, or F CLIFF. The character marked thus,

and placed at the beginning of a stave in which the bass or lower notes are placed.

BASSO RELIEVO. In English, bas-relief, a sort of sculpture in which the figures are represented as projecting not far above the plane on which they are formed. Figures cut are said to be done in relief, and when the work is low or flat, it is called bas-relief, or basso relievo, in distinction from alto relievo and mezzo relievo.

BASSOON. A musical wind instrument blown with a reed, and has eleven holes. It serves to play the bass part in concerts.

BASS VIOL. A stringed musical instrument of the same shape as a violin, but much larger.

BASS VOICE. The gravest and deepest of the male voices.

BASTARD (in Law.) One born out of wedlock, who cannot inherit.

BASTILE. A fortress in Paris, which was used as a prison, and destroyed during the French revolution.

BASTINADO. A mode of punishment usual among the Turks, of beating the offender on the soles of the feet.

BASTION. A large mass of earth, standing out from a rampart, of which it forms the principal part.

BAT. An animal resembling both a bird and a mouse. It has wings not of feathers, but of a skin distended, and flies only at night. It lays no eggs, but brings forth its young alive, and suckles them.

BATEMENT (in Carpentry.) The wasting of stuff in cutting it for the purpose designed.

BATH. Any receptacle for water which is convenient for bathing; also any artificial contrivance which is to supply the place of a bath, as a shower bath, or an apparatus for applying water to the body in the form of a shower; a vapour bath, or a mode of conveying moisture to the body by means of steam; a medicinal bath is that in which certain chymical preparations are mingled.

BATH (in Chymistry.) A contrivance by which heat is conveyed to any substance; also, in the refining of metals, the fusion of the metallic matter is called a bath.

BATH, KNIGHTS OF THE. A military order of knighthood, restored, if not instituted, by Henry IV. These knights wear a red ribbon, and their motto is, Tria juncta in uno, alluding to the three cardinal virtues, faith, hope, and charity, which every knight ought to possess.

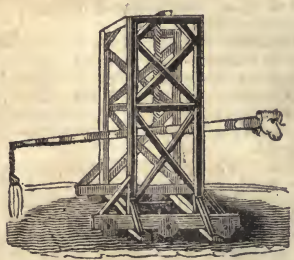
BATON. The staff or truncheon given as a symbol of authority to generals in the French army.

BATTA. Allowances made to troops in India. Dry batta is money given in lieu of rations; wet batta, what is given in kind.

BATTALION. A body of foot soldiers of from 600 to 800 men.

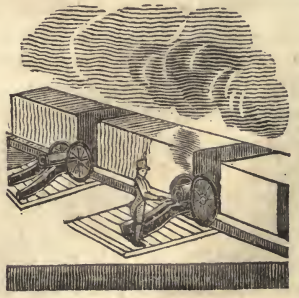
BATTEL. An ancient mode of trial by single combat, which has lately been abolished in England.

BATTERING-RAM. A military machine, with which the ancients effected breaches in fortifications. These engines were variously constructed, and of different sizes. Plutarch informs us, that Marc Antony, in the Parthian war, used a ram of 80 feet long; and, according to Vitruvius, they were sometimes 106, and even 120 feet long, and weighed 100,000 lbs. This engine was frequently used in the fourteenth century, and occasionally for other purposes besides that of war in later periods. Sir Christopher Wren is said to have employed it in demolishing the walls of the old church of St. Paul, previously to his rebuilding it. Sometimes they were swung on ropes, and at others driven by men, who were protected from the besieged by suitable coverings.



BATTERY (in Law.) The striking, beating, or offering any violence to the person of another, as by spitting in his face, or any way touching him in anger, or violently jostling against him. It is distinguished from an assault, inasmuch as the latter does not necessarily imply a hitting or blow. There may be an assault without battery, but there cannot be a battery without an assault.

BATTERY (in Military Affairs.) Any raised place on which cannon are placed. Batteries are of different kinds, as open batteries, which are exposed to view; masked batteries,

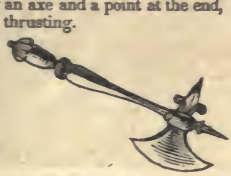


which are hidden by a breastwork; cross batteries, two batteries firing athwart each other on the same object, &c. A floating battery is a battery erected on simple rafts, or the hulls of ships.

BATTERY (in Electricity.) A combination of coated surfaces of glass jars, so connected that they may be charged at once, and discharged by a common conductor. A battery or pile is also an apparatus employed for accumulating the electricity of galvanism.

BATTLE. A contest for victory, in which vast bodies of men are often engaged, with every means of mutual destruction, and in which millions have died victims of the folly or ambition of their leaders. The most decisive battles recorded in history, are those at Marathon, of the Athenians and Persians; at Issus, of Alexander and Darius; at Canna, of the Carthaginians and Romans; at Pharsalia, between Pompey and Cæsar; at Chalons, between the French and the Huns; at Hastings, between the Normans and English; at Bannockburn and Flodden, of the Scots and English; at Cressy, Poictiers, and Agincourt, of the French and English; at Ascalon, of Bajazet and Tamerlane; at Pavia, of the French and Germans; at Blenheim, the French and Allies; at Fontenoy, of the French and English; at Luthen and Riesbach, of the Prussians and French; at Marengo, of the French and Austrians; at Austerlitz, Jena, Friedland, Leipsic, and Waterloo, of the French and allied nations; and at New-Orleans, of the English and Americans.

BATTLE-AXE. An ancient sort of weapon, having an axe and a point at the end, for cutting or thrusting.



BATTLEDORE. An instrument used either with a shuttlecock or a tennis ball.

BATTLEMENTS. Notches or indentures in the top of a wall or building, like embrasures, to look through.

BATTON. A staff or truncheon used in coats of arms, to denote illegitimacy.

BAY. Any inlet of the sea between two capes, or promontories, where ships may ride; it is defined in geography, an arm of the sea stretching inland.

BAY, or Bay Tree. The female laurel tree, an evergreen, which grows wild in Italy and France.

BAY. A colour in horses resembling the dried bay leaf.

BAY LYNX. An American animal, about twice the size of a large cat.

BAYONET. A short triangular dagger, made to fix on the muzzle of a firelock or musket.

BAY-SALT. A salt which is made from seawater, by letting the water into pits or basins, where, by the heat of the sun, it is evaporated, and the residue is converted into crystals of salt.

BAZAAR. A place mostly covered and fitted up with shops in Eastern countries; also, a similar collection of shops lately introduced into England and America.

BDELLIUM. The gum of an Arabian tree, about the size of an olive tree. The gum resembles wax, and consists of resin, gum, cerasin, and volatile oil.

BEACH. The seashore, or margin of the sea, which is washed by the tides.

BEACON. Something raised on an eminence, as a public signal.

BEAD (in Architecture.) A round moulding, carved in short embossments, like the bead of a necklace.

BEADLE. The messenger belonging to a public body, or court of justice; also, the officer of a church or parish in England.

BEAD TREE. A shrub, the fruit of which is a nut, that is bored through and strung as beads by the Roman Catholics in Spain and Portugal.

BEAGLE. A sort of hunting dog.

BEAK, or Beak-head of a Ship. That part of it which is without before the forecastle, and serves by way of ornament. Among the ancients it was a piece of brass, like a bird's beak.

BEAM. The largest piece of wood in a building, which is its main support; in Naval Architecture, beams are the large main timbers that stretch across a ship to support a deck.

BEAM-COMPASS. An instrument consisting of a square wooden or brass beam, with sliding sockets, used for describing large circles.

BEAM-TREE. A tree which grows to the height of thirty or forty feet, so called because it is particularly fitted for making axletrees and the like.

BEAR. A quadruped, of which there are ten species, and three of them well known. 1. The brown bear, which subsists chiefly on fruit, vegetables, and honey. 2. The American or black bear, which is smaller than the other, feeds in like manner. 3. The Polar bear, white, and from 8 to 12 feet long; of great strength and ferocity, devouring fish, seals, and whales at sea; and on land, any animals which it can catch; and it even attacks men, as represented in the engraving.

BEAR'S BREECH. An herb, from the smooth leaved sort of which is extracted a mucilage. (See ACANTHUS.)

BEARD (with Botanists.) The under lip of a labiated flower, and in corn and grass that hair or bristle which serves to defend the ear, as in barley, rye, wheat, and oats.

BEARD OF A COMET (in Astronomy.) The rays which a comet emits towards that part of the heavens to which its course seems to direct it.

BEARD OF A HORSE (in Farriery.) The chuck, or that part under the lower jaw, on the outside, and above the chin, which bears the curb of the bridle.

BEARERS. Posts or brick walls, which are trimmed up between two ends of a piece of timber, to shorten its bearing, or to prevent its bearing with the whole weight at the ends only.

BEARING (in Architecture.) The distance between the bearer, or support, and each end of the timber.

BEARING. A sea term, to denote the situation of any distant object with regard to the ship's position, whether ahead, astern, or abreast, &c.

BEARING (in Heraldry.) Whatever is borne in or fills the escutcheon.

BEAT. The walk or round which a watchman has to take at stated intervals.

BEATING TIME. That motion of the hand or foot by which some person marks and regulates the movements of the performers.

BEATS (in a Clock or Watch.) The strokes made by the pallets or fangs of the spindle.

BEAVER, an interesting and intelligent amphibious animal, which builds substantial dwellings on rivers, and is hunted and destroyed by man for the down, of which hats are made. The engraving represents a colony of these creatures in a sort of council, before they begin any work.

BEAVER. That part of the helmet which defends the sight, and opens in front.

BEAU MONDE. The gay fashionable world.

BED (in Gunnery.) A thick plank which lies under a piece of ordnance, on the carriage.

BED (in Masonry.) A range or course of stones.

BED (in Mineralogy.) A stratum or layer of any earth or stone.

BED OF A RIVER. The bottom of a channel in which the stream or current usually flows.

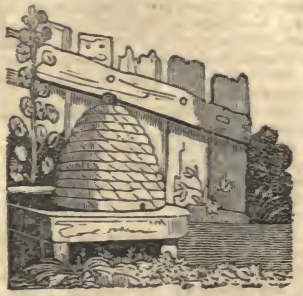
BED-BUG, an insect which is disgusting to every tidy house wife, and the torment of the weary and sleepy traveller. It is too well known to need description. They may be thoroughly extirpated by a solution of powdered corrosive sublimate, dissolved in a pint of

spirits, and applied to the joints of the bedstead with a feather, but great caution should be observed in its use, as it is a most deadly poison.

BED-ROOM. An apartment or chamber, devoted to the enjoyment of nightly repose, after the usual labour and fatigue of the day.

BEE or APIS. A genus of interesting insects. A hive consists of a queen, several hundred drones, and many thousand workers. The body of the queen is considerably larger than that of the others. The government is a regular monarchy, and if there should be two queens, they fight till one has killed the other. The queen is an object of incessant solicitude and attention to the other bees; she lays 80,000 eggs in a season; the drones do nothing, but after living three months they are killed by the workers. These collect honey and wax from the nectaria of flowers; bread from the pollen; and resin for their combs. They finish a comb in 24 hours; it is composed of six-sided cells arranged in two layers with opposite openings, so constructed as to afford the greatest space with the least material, and the whole is geometrically perfect. It is a wonderful system; and every bee is so much engaged in its own industrious pursuits, that it never attacks or stings, except when assaulted or endangered. An admirable system of preserving them, instead of barbarously suffocating them with sulphur, has lately been introduced, and cannot be too much commended and encouraged.

BEE-HIVE. A receptacle for bees, made of straw and other materials. The bees in one hive are called a swarm, and herein they form their cells and accumulate sufficient honey by September to last them till June; but as they pass the winter chiefly in a lethargic state, the honey may be taken by suitable means, and the bees fed with honey, or with a mixture of brown sugar and strong beer, a system now generally practised.



BEER. A drink made of malt and hops by the process of brewing; it is of three kinds, namely, strong beer, ale, and table beer, or small beer.

BEESTINGS. A term in Husbandry for the first milk taken from a cow after she calves.

BEETLE. The scarabæus of Linnæus, a well known insect, produced from the larvæ or grubs that live under ground. It has six feet, is hairy at one end, and lives in dry decayed wood, &c.

BEETLE. A large wooden hammer for driving palisadoes.

BELFRY. That part of a church steeple in which the bells are hung.

BELL. A metallic instrument of sound, used for giving notice in churches and houses. They were introduced into English churches about the year 700, and used to be baptized and named before they were hung. The number of changes may be found by multiplying the digits in the number into one another:

thus, four bells will give 24 changes, and 6 bells 720; and 10 changes may be rung in a minute. St. Peter's bell at Rome weighs 18,000 lbs.; Great Tom, of Oxford, 17,000 lbs.; Lincoln, 9900 lbs.; and St. Paul's, 8400, St. Ivan's, of Moscow, weighs 128,000 lbs.

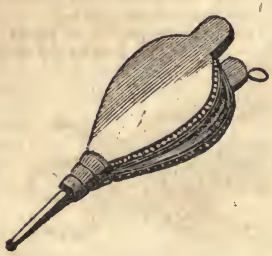
BELLES LETTRES. A French term for polite literature.

BELLIGERENT. An epithet applied to states that are at war.

BELL METAL. A metal employed in the manufacture of bells, which usually consists of three parts of copper and one of tin.

BELLONA. The goddess of war, and sister of Mars.

BELLOWS. A machine for blowing the fire. This machine is so contrived as to expire and respire the air alternately, by enlarging and contracting its capacity. The air which enters the bellows is compressed when they are closed, and flows out of the pipe with a velocity proportioned to the force by which it is compressed. The bellows of smiths and founders are worked by a rocker.



BELLOWS OF AN ORGAN. The pneumatic part of the machine, by which it is supplied with wind. The bellows of a large organ are worked by a man called the blower; those of smaller organs by the foot of the player.

BELLUÆ. The sixth order of animals in the Linnean system, having their feet hoofed, as the equus, or horse; sus, the swine; the hippopotamus, and the tapir.

BELT. A girdle for hanging a sword or any other weapon in.

BELT (in Heraldry.) A badge of the knightly order, given to a person when he was raised to the knighthood.

BELT (in Surgery.) A bandage applied round the body.

BELT (in Masonry.) A range or course of bricks projecting from the rest.

BELTEIN. An ancient festival in Ireland, celebrated on the 21st of June, the summer solstice, when fires were made on the tops of the hills.

BELTS, or FASCIÆ. Two zones or girdles round the planet Jupiter, more lucid than the other parts of his body, and terminated by parallel straight lines, sometimes broader and sometimes narrower, varying both in magnitude and position. These belts were first observed at Naples, by Zuppi and Bartoli, two Jesuits.

BENCH. A seat of justice; also the persons sitting on a bench, as a bench of magistrates.

BENCHER. A lawyer of the oldest standing in the inns of court.

BEND (in Heraldry.) One of the ten honourable ordinaries, drawn from the dexter, or right corner, at the top of the escutcheon, to the sinister base, or left corner, at the bottom. It is supposed to represent a shoulder belt, or scarf, and to show the wearer to be valiant in war. It is sometimes called a bend dexter, to distinguish it from the bend sinister, which is drawn from the left side of the shield to the right.

BEND. A sea term for the knot by which one rope is fastened to another, or to an anchor.

BENDING. A sea term for the tying two cables or ropes together, or to any thing else.

BENDING (in Physiology.) The reducing a body to a curved or crooked form. The bending of boards, planks, &c. is effected by means of heat, whether by boiling or otherwise, by which the fibres become relaxed and flexible.

BENDS IN A SHIP. The outermost timbers of the side, to set the foot on in climbing up the side. They are reckoned from the water, first, second, and third bend, and are of great service in strengthening the ship, as into them the beams, knees, and foothooks, are bolted.

BENEFICE. An ecclesiastical living, but particularly rectories and vicarages.

BENEFIT OF CLERGY. A privilege in law, at first peculiar to the clergy, but in after times made common to the laity. When any one was convicted of certain crimes, he had a book given him to read, and if the ordinary or his deputy pronounced these words, 'Legit ut clericus, he reads like a clergyman, or scholar,' he was only burnt in the hand, and set free for the first offence; otherwise he was to suffer death.

BENZOIN. A dry solid resin, of a fragrant smell, produced by incision from the styrax, an Indian tree. It is brought to us from the East Indies, particularly Siam and

the Islands of Java and Sumatra, in masses of various sizes, composed of small granules of a whitish or yellowish colour, with a purple cast on the surface. It is very inflammable, and diffuses a fragrant smell while burning, and so in like manner when rubbed in the hand. When the benzoin tree is six years old, the natives cut it in several places in an oblique direction, and the benzoin flows from the wounds. Benzoin is used by perfumers in making sweet bags, &c. and was formerly very much esteemed as an expectorant. The tree was brought from Virginia into England.

BEQUEST. A legacy; what is bequeathed or left by will.

BERENICE'S HAIR. A constellation in the northern hemisphere.

BERGAMOT. A fine sort of pear, which is of two sorts, namely, the summer bergamot and the autumn bergamot.

BERGAMOT (in Chymistry.) A fragrant essence, extracted from a fruit which is produced by ingrafting a branch of a lemon tree upon the stock of a bergamot pear. This essence is got by cutting the external rind of the fruit into small pieces, and squeezing them into a glass vessel, in the same manner as the juice of a lemon is squeezed out, by which means an ethereal oil is procured of a very fragrant smell.

BERRY. A round fruit, for the most part soft, and covered with a thin skin, containing seeds in a pulpy substance.

BERYL. A precious stone, which, in its purity, is of a perfectly sea-green colour, and on that account called aqua marina. It is nearly as hard as the topaz, and can scarcely be melted without the addition of some other substance. Beryl is also (in Painting) the sea-green colour, in imitation of this stone.

BETA. The second letter in the Greek alphabet.

BETAL. A sort of pepper plant, the leaf of which is universally chewed by the southern Asiatics, to sweeten the breath and strengthen the stomach. It is a slender-stemmed climbing plant.

BEVEL. An instrument with a moveable tongue, to strike angles of a greater or less magnitude.

BEVELLING (in Carpentry.) Hewing timber with a proper or regular curve.

BEY. An officer of high rank among the Turks, inferior to none but the pacha.

BEZANTS. Round flat pieces of bullion, without any impression, which are supposed to have been the current coin of Byzantium. This coin was probably introduced into coat armour by those who went to the wars.

BEZOAR. A medicinal stone, brought from the East and West Indies, which was formerly reckoned a sovereign antidote against poisons. It is found to be a morbid concretion in the intestines of some animals.

BIBLE. The collection of the books of the Old and New Testament. The Old Testament was first translated by the 72 interpreters, and thence called the Septuagint: of the Latin versions, that of St. Jerome was confirmed by the council of Trent for vulgar use, and thence got the name of the Vulgate. The Bible was translated into the Saxon tongue about the year 940; and into the English, by William Tindal, in the twenty-first year of the reign of Henry the Eighth, when it was printed. The present authorized version of the Holy Scriptures was completed in the reign of James the First, about the year 1603.

BIBLIOGRAPHER. A person conversant with books.

BIBLIOGRAPHY. The knowledge of books as to their several editions, time, and form of being printed, type, and other particulars connected with their publication.

BIBLIOMANIA. A rage for scarce and old editions of books.

BICE (in Painting.) A blue colour prepared from the lapis armenus; it bears the best body of all bright blues used in common work.

BIENNIALS. Plants that flourish for two years, and seldom more.

BIGAMY. This properly signifies being twice married; but with us is used as synonymous to polygamy, or having a plurality of wives at once. Such second marriage, the former husband or wife being alive, is simply void, and a mere nullity, by the ecclesiastical law; and yet the legislature has thought it just to make it felony, by reason of its being so great a violation of the public economy and decency of a well-ordered state.

BIGHT. The double part of a rope where it is folded, in distinction from the end.

BIGOT. A person absurdly attached to certain forms and opinions.

BILBOES. A term at sea for the long bars of iron with which the feet of offenders are confined, the irons being more or less heavy, according to the nature of the offence.

BILE. A bitter fluid secreted in the glandular substance of the liver, and passing through the gall bladder and the porus biliarius, is dis-

charged into the duodenum, where it converts the chyme into chyle and excrement. The constituent parts of bile are water, soda in a caustic state, phosphate of lime, and a resinous albuminous principle.

BILGE. A sea term, for the bottom of the floor of a ship, the compass or breadth of its bottom. A vessel is said to bilge when she has struck off some of her timber against a rock.

BILL. An edged tool, or hatchet, with a hooked point, for lopping of trees and making hedges; if it have a short handle, it is a hand-bill; if a long handle, a hedging-bill.

BILL (in Law.) A declaration in writing expressing any grievance or wrong which one person has suffered from another; also, an instrument drawn up by any member and presented to a legislative body for its approbation or rejection.

BILL OF EXCHANGE (in Commerce.) A note containing an order for the payment of a sum of money to a person called the drawer, who, when he has signed it with his name, and written the word accepted, is called the acceptor. The person in whose favour it is drawn, or to whom it is ordered to be paid, is called the drawee, or payee, who, when he has endorsed it, is called the endorser. He who is in possession of the bill is the holder.

BILL OF FARE. An account of such provisions as are in season, or are to be supplied for the table.

BILL OF LADING, or INVOICE. A deed signed by the master of a ship, by which he acknowledges the receipt of the merchant's goods, and obliges himself to deliver them at the place to which they are consigned.

BILL OF PARCELS. A tradesman's account of goods sold and delivered.

BILLET. A ticket for quartering soldiers: also a small paper, or note, folded up as a billet doux, or love letter.

BILLET. A small log of wood; also, in Heraldry, a bearing in the form of a square, supposed to represent cloth of gold and silver.

BILLETING (in Military Affairs.) Ordering soldiers to be quartered in particular houses by a billet or small ticket.

BILLIARDS. A game played on an oblong table, exactly level, and covered with cloth, by the means of ivory balls, which are struck or driven with sticks, made bending, so as to drive the antagonist's ball into holes, called hazards or pockets, at the corners or by the sides of the table. The art of the game lies in pocketing your antagonist's ball without putting in your own.

BILLION. A million of millions.

BILLS OF MORTALITY. Annual registers of deaths and burials.

BINDING OF BOOKS. The art of doing up books in leather or vellum, as distinguished from those done up in boards or only sewed.

BINNACLE. The box in which the magnetic needle is placed on ship-board.

BINOMIAL. A term in algebra for any quantity consisting of two names, or terms, connected together by the sign +, or —, as $a+b$.

BIPED. An animal with only two legs, as men and birds.

BIQUADRATIC. The square squared, or the fourth power of any quantity.

BIRCH TREE. A tree with leaves like the poplar, the fruit of which is a squamose cone.

BIRDCALL. A whistle or pipe to decoy birds.

BIRD-CATCHING. The art of taking birds or wild fowl by birdlime, nets, and decoys, which, as respects the more artful modes of catching birds, is called fowling. In the western islands of Scotland, where the birds live in rocks, a dangerous mode of bird-catching is in use, as is represented in the engraving.

BIRDLIME. A glutinous substance, made of the bark of holly, which is spread on the twigs of trees to catch birds.

BIRDS. (See AVES.)

BIRTH. A sea term for the station in which a ship rides at anchoring ground, as a good birth, for a good anchoring ground; also, a place appointed in a ship or barrack for an individual.

BIRTHRIGHT (in law.) Honour or estate belonging to a person by right of his birth.

BIRTHWORT. An herb having a perennial root.

BISCUIT. Flour and water baked; also, potter's earthenware when first fixed or baked, before it is dipped into the composition, which, by a second firing, forms the *glaze* or glassy coating seen on all earthenware and porcelain.

BISECTION. The cutting any quantity, as a line or angle, into two equal parts.

BISHOP. A dignitary who presides over the clergy within a certain district, called his diocess. Bishops are suffragans, or assistants, to the archbishop, who is the chief of the clergy

in his bishopric. The bishop is said to be installed, the archbishop to be enthroned.

BISHOPRIC. The diocess, or district, over which a bishop presides.

BISMUTH. A metal of a yellowish or reddish white colour. It is rather harder than lead, and scarcely if at all malleable, being very brittle; it melts easily, and is soluble in acids.

BISON. A variety of the ox, which has its horns bent forwards, back gibbous, and mane long.

BISSEXTILE, or LEAP YEAR. A year consisting of 366 days, by the addition of a day in the month of February, when that month consists of 29 instead of 28 days. This happens every fourth year. The day thus added is also called Bissextile, and it was on this account, that Cæsar appointed it to be introduced by reckoning the twenty-fourth day of February twice, and as that day was the same as the sixth of the calends of March, a day celebrated among the Romans on account of the expulsion of the Tarquins, it was called bis sextus calendarum Martii, and afterward Bissextile. By the stat. 21 Hen. III. De Anno Bissextile, to prevent misunderstandings, the intercalary day and that next before it, are to be accounted as one day.

BISTER. A colour made of chimney soot boiled and diluted.

BISTOURY. A small surgical knife of various forms, according to the purpose for which it is intended.

BIT (in Carpentry.) A boring instrument so constructed as to be taken out of the handle.

BIT, or BIT OF A BRIDLE. The iron attached to the bridle, which is put into the horse's mouth.

BITT. A sea term for the two pieces of timber to which the anchor cables are attached.

BITTER. A sea term for the turn of the cable round the bitts.

BITTER ALMOND. A sort of almond tree, the fruit of which is bitter.

BITTER-APPLE. See COLOQUINTIDA.

BITTER PRINCIPLE. The bitter parts of vegetable substances, which may be extracted by a chymical process. Artificial bitter is any bitter formed by the action of nitric acid on vegetable and other substances.

BITTER-SWEET. A sort of solanum, a perennial.

BITTERN, or BITTOUR. A bird of the heron kind, of retired habits, that conceals itself in the reeds and marshes. It sends forth a croaking note when it is disturbed.

BITUMEN. A combustible mineral, which when most fluid, is called naptha; when viscid, petroleum; and when hard, asphaltum. Coals are supposed to be of vegetable origin, and bitumen a compound of vegetable and animal substances.

BIVALVES. One of the three general classes of shellfish, the shells of which are composed of two pieces, joined together by a hinge.

BLACK. A colour which is supposed to be produced by the peculiar texture of bodies, which deaden as it were the light falling upon them, and reflect none, or very little of it, outwards towards the eye.

BLACK. A colour or dye, as lamp black, the smoke of resin, prepared by melting it in iron vessels; ivory black, made of burnt ivory, and used by painters; Spanish black, made of burnt cork, and first used by the Spaniards.

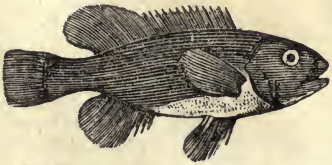
BLACKBERRY. The fruit of the bramble, or blackberry bush.

BLACKBIRD. In England, a singing bird, with a fine note, but very loud. In America, the name is given to different kinds

of birds, some of which are very troublesome, in planting time, to the farmers.

BLACKCAP. A little bird with a fine black crown on its head.

BLACK FISH. A fish about ten inches long, weighing from one to five pounds, in shape resembling the sheat fish. It is common in the United States, and is considered fine eating.

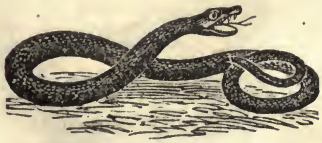


BLACK GROUSE. A species of feathered game, of violet black colour, with the tail forked, and the secondary quill feathers white toward the base. It weighs from two to four pounds.

BLACK LEAD. A mineral, the plumbago or graphites of Linnæus. It is found in lead mines, and is fusible only by a violent heat. Lead pencils are made of it.

BLACK LETTER. A sort of old English alphabet.

BLACK SNAKE. A common reptile in the United States: its length is from five to six feet. It has an uncommonly bright eye, with which it is said to have the power of fascinating birds so completely as to cause them to fall into its mouth. It is perfectly harmless, fleeing at the approach of man.



BLADDER. A thin membranous substance, which serves as the receptacle of some fluid, as the urinary bladder and the gall bladder.

BLADDER-NUT. A tree, the fruit of which is contained in a membrane inflated like a bladder.

BLADDER-SENNA. A shrub which yields a papilionaceous flower, that is succeeded by pods resembling the inflated bladder of fishes.

BLADE. The flat part of a sword or knife, resembling the blade or leaf of grass in shape.

BLADE-BONE. The shoulder bone.

BLAIN (in Farriery.) A distemper incident to animals, being a bladder at the root of the tongue, which stops the breath.

BLANCHING. The art of making any thing white, as (in horticulture) the method of whitening salads. Blanching money is the annealing, boiling, and cleansing it when it is coined. Blanching copper is done in various ways, so as to make it resemble silver. Blanching is also the operation of covering iron plates with a thin coat or crust of tin. Blanching almonds is the skinning them by means of hot water.

BLANK. A void space in any writing or printing.

BLANK VERSE. That which has no rhymes.

BLANKETS (in Printing.) Woollen cloths to lay between the tympans of a printing press, in order to produce a fair impression.

BLANKETS. A sea term, for combustibles made of coarse brown paper steeped in nitre, dried, and then steeped again in tallow, resin, and sulphur; they are used in fireships.

BLAST. A disease in grain and trees; called also a blight.

BLASTING (among Miners.) The tearing up rocks by the force of gunpowder.

BLASTING-BELLOWS. Instruments used when greater heat is wanted than could be obtained by the common accession of the air, fire and heat being nothing more than atoms fixed, which were previously in motion, and the purpose of bellows is to bring more of them into contact with the fire. Sometimes they have a wheel turned by water or steam, and the shaft, being provided with projecting pieces, raises and lowers the upper sides of these enormous bellows which discharge their volumes of air into the furnace.

BLAZONRY, or BLAZONING. That branch of the art of heraldry which consists in expressing in proper terms all that belongs to coats of arms. The word comes from the German blasen, to blow; because a trumpet used to be blown at justs, &c. previously to the herald's recording the achievements of the knights.

BLEACHING. The process of whitening linen by exposure to the sun and air; or, as is now more commonly in use, by the application of chymical preparations.

BLEACHING LIQUID. Oxymuriatic

acid, or sulphuric acid combined with chloride of lime.

BLEAK. A fresh-water fish, from whose scales artificial pearls are made.

BLEMISH (in Farriery.) Any imperfection in a horse which impedes a sound warrant, as broken knees, cracked heels, &c.

BLENDE. The ore of zinc.

BLIGHT. A disease incident to plants, which consists in a sort of fungus, that converts the affected part into a sooty mass.

BLINDNESS. Loss of sight, sometimes arising from an opacity of the humours of the eye, and sometimes from the nerves losing their power by the action of intense light, as from lightning.

BLINDS. A contrivance to prevent any one seeing through a window; in Military Affairs, bundles of osiers used at the heads of trenches, to protect the men.

BLINDWORM, or SLOWWORM. A worm so called from the smallness of its eyes and the slowness of its motion.

BLISTER. A pustule in the skin, filled with serum; in general, any swelling caused by the separation of the outer integument of any substance from that which is underneath.

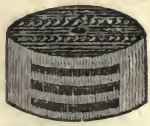
BLISTER (in Medicine.) The plaster or application that raises a blister, mostly made of the cantharides, or Spanish flies.

BLOCK. A sea term for a pulley, or series of pulleys, mounted in a frame, or shell, which serves to facilitate the passage of the ropes. Blocks are single, double, treble, &c. according to the number of shives in them through which the running ropes run.

SINGLE BLOCK.

DOUBLE BLOCK.

TREBLE BLOCK.



BLOCKADE. The blocking up the roads or entrances to a place, by means of soldiers or vessels, so as to prevent any ingress or egress.

BLOOD. A warm red fluid, of a saltish taste and urinous smell, circulating through every part of the body by means of arteries and veins. The blood is found to contain an insipid water, which soon becomes putrid, an empyreumatic oil, an ammoniacal spirit, and the remainder carbon. The quantity in the human body is about thirty pounds.

BLOOD (in Law.) Is regarded in descent of lands, for a person must be next and most worthy of blood in order to inherit his ancestor's estate.

BLOOD-HORSE. A breed of horses originally from the Arabian stock, the excellence of which consists in the compactness of his fibre, that adds to his strength without increasing his bulk.

BLOOD-HOUND. A hunting dog of such exquisite scent, that he will follow the track of men as well as of animals.

BLOOD-STONE, or HEMATITES. A hard mineral substance of a red or purple colour. It is found in masses of different forms, and contains a considerable portion of iron, but the blood-stone itself, on account of its hardness, serves to burnish or polish metals.

BLOODSHOT. A distemper in the eyes, when the vessels are so distended as to make them appear red.

BLOODSUCKER. A leach which sucks the blood of any animal to which it is applied.

BLOWING GLASS. The process in glass houses of forming glass into various shapes, by means of blowing through a blowpipe dipped into the melted glass.

BLOWPIPE. A tube through which air is blown, and more oxygen brought in contact with flame: and, latterly, it has been contrived to pass a jet of oxygen and hydrogen through it, when it is called the gas blow-pipe, the heat of which disperses and melts the most refractory substances.

BLUBBER. The fat of the whale before it is boiled. Sea blubber, the vulgar name of a shellfish.

BLUE. One of the seven primitive colours into which they are divided when refracted through a glass prism. Blue, as a colour in painting, is distinguished into ultramarine, from the azure stone; blue ashes, used in limning, fresco, and miniature; blue verditer, a blue somewhat inclining to a green; prussian blue, a colour next to ultramarine for beauty.

BLUEBOTTLE. An annual, having a bell-shaped flower. The flower is borne in coats of arms.

BLUEBOTTLE. A large kind of fly with a blue body.

BLUE CAT. A variety of the wild cat, but of blue colour.

BLUE JAY. A bird of a blue colour, from six to eight inches in length, the head of which is covered with a tuft of feathers, which it erects at pleasure into the form of a crest.

BLUE (or WEAK) FISH. A fish of the order of thoracics, found in great numbers about the Bahama islands, and on the coast of Cuba; common also in the United States.

BLUEING. The process of heating iron and other metals in the fire, until they assume a blue colour, which is the practice of gilders before they apply the gold and silver leaf to them.

BLUFF. A sea term for a high land projecting almost perpendicularly into the sea.

BLUNDERBUSS. A short brass gun with a large bore.

BOA CANINA. A snake of South America, of a beautiful make, about four feet long; the head is large, and resembles that of a dog; and the colour of the animal is an elegant green with white stripes.

BOA CONSTRICTOR. A serpent of immense size and strength, a native of Africa and India, measuring sometimes twelve yards in length. It will twist itself round the bodies of oxen and other animals, and, breaking their bones, swallow them whole.

BOAR. The male of the swine. The boar's head is often borne in coats of arms.

BOARD. A sea term, for the space a ship runs over between tack and tack, as to make short boards, that is, to tack frequently; also the ship itself, as to go aboard, that is, into the ship; so board and board is said of two ships coming so near to each other as to touch by the board over the ship's side.

BOARD (in Carpentry.) Any piece of timber sawed to a less thickness than one inch; all above this thickness are planks.

BOARD, or PASTEBOARD. Layers of paper so pasted together as to make a substance as hard as a board.

BOARDING. The fixing of boards for any purpose, as a floor; (in Naval Tactics) the entering a ship in a forcible manner.

BOARDS, or by way of contraction, BDS. The manner of doing books up in pasteboard covers, without leather.

BOAT. A small open vessel worked on rivers or small waters by rowing or sailing.

BOATBILL. A bird of South America, having a bill that resembles a boat in shape. It lives upon fish, and darts down upon them as they are swimming.

BOAT-FLY. An insect with an inflected snout, that lives in stagnant waters.

BOATSWAIN. A sea term, for the officer who has the boats, anchors, &c. in his charge.

BOB. The metallic weight attached to a pendulum.

BOBBIN. A sort of tape.

BOBBINS. Little pins of wood with a notch, on which thread, &c. is wound.

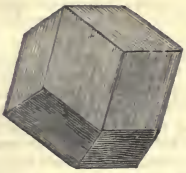
BODKIN. A long sort of pin, on which women used to roll their hair.

BODY (in Geometry.) Any solid having three dimensions, length, breadth, and thickness. Regular bodies, which have all their angles and sides similar and equal, are of five

kinds, namely, tetraedron, a body contained under four equilateral triangles; hexaedron, a body containing six squares; octaedron, a body having eight triangles; dodecaedron, a body containing twelve pentagons; icosaedron, a body containing twenty triangles. Irregular bodies are solids which are not bounded by equal and like surfaces.

The Hexaedron.

The Dodecaedron.



BODY (in Physics.) An extended solid substance, consisting of hard, impenetrable, moveable particles. It is a hard body when its parts do not easily yield to any stroke or percussion; a soft body when it yields to every stroke, and thereby undergoes a change; an elastic body, that changes its form with every stroke, but recovers it again when the impelling force is removed.

BODY. In the phrase 'to bear a body,' a term applied by painters to any colour which is of a nature to be ground so freely, and to mix with oil so entirely, as to seem one thick oil of the same colour.

BODY. Of a chymical vessel, that which holds the matter in distillation. Body of a pump, the thickest part of the barrel or pipe. Body, in an army, any number of forces united under one commander.

BOILING POINT. The fixed point or degree of heat required to produce the ebullition or boiling of a fluid. Every liquid has a fixed point at which boiling commences, and this is called the boiling point. Thus water begins to boil at the temperature of 212°. After a liquid has begun to boil, it will not become hotter, for although a stronger heat makes all liquids boil more rapidly, yet it does not increase their temperature.

BOLE. A friable earth of the argillaceous kind, which unites with water so as to form a paste. The Armenian bole, or bole armeniac, is a bright red coloured earth, so called from Armenia, the country from which it is procured.

BOLL. A measure of two bushels.

BOLOGNA STONE. A phosphoric stone, first found at Bologna in Italy. It is a gray soft sulphureous stone, about the size of a large walnut, which shines in the dark after calcination. This stone is the native sulphate of carytes.

BOLSTER. A soft pillow for a broken limb; in Farriery, it is the name of those parts of a saddle which are raised upon the bows to receive the rider's thighs.

BOLSTER. A sea term, for a piece of timber cut and placed for the easement of the cable.

BOLT. An iron pin used for strengthening timber.

BOLUS. An internal medicine, of a consistency thicker than honey.

BOMB. A shell filled with combustibles, and discharged from a wide-mouthed gun, called a mortar.

BOMBARDMENT. The discharging of bombs into a besieged place.

BOMBASIN. A very close and fine silk and worsted fabric.

BOMBIC ACID. An acid liquor contained in a reservoir near the anus of the silk-worm.

BOMBKETCH. A small vessel built and strengthened with large beams, for the use of mortars at sea.

BONA FIDE. With good faith; without fraud or subterfuge.

BOND (in Law.) An obligation or covenant in writing to pay any sum, or perform any contract.

BOND (in Carpentry.) The binding of any two pieces together by tenanting, morticing, &c. In Masonry, it is the disposition of stones or bricks in a building, so that they most aptly fit together; stones having their length placed in the thickness of the wall are called headers, and those whose length extends along the face or exterior of the wall are called stretchers.

BOND-TIMBERS. The horizontal timbers bedded in stone or brick walls for strengthening the masonry.

BONDSMAN. One bound or giving security for another.

BONE. A hard, dry, insensible part of the body, composed of a spongy reticular substance, and an oily matter called marrow. There is also a considerable portion of phosphate of lime that enters into their composition. The bones of the human body are in number 246. The head and face 63, the trunk 59, the arms 64, and the lower extremities 60.

BONE. A sea term, in the phrase 'To carry a bone in her mouth,' applied to a ship when she makes the water foam before her in sailing.

BONE-LACE. Lace made on bobbins that are formed from bones.

BONES. A sort of bobbins made of trotter-bones, for weaving bone lace.

BONES. A name in Mathematics given to Lord Napier's rods for facilitating arithmetical calculations.

BONING. A term among surveyors, to denote the laying poles upon the ground in such a manner that all may lie in a straight line.

BONNET (in Heraldry.) A cap of velvet worn without a coronet.

BONNET. A sea term, for the addition of a small sail made to fasten with latchings to the foot of the other sails.

BONNET (in Fortification.) A small work composed of two faces, usually raised before the salient angle of the counterscarp.

BONZE. A Chinese devotee, who endeavours to extort money by every variety of self-devotion, as carrying burning coals on his head, mangling his flesh, dragging weights about, extending his limbs for years in one position, and other monstrous practices, serving to display the mischiefs of superstition.

BOOBY. A South American bird of the pelican tribe.

BOOK. Any folded leaves which are or may be written upon; also a general name for any literary composition, but more particularly any composition large enough to be formed into a volume. Before the use of books or volumes things were committed to writing on stone, wood, bark, &c. The Decalogue was written on tables of stone; so likewise, as we learn from Josephus, the children of Seth wrote their inventions and astronomical observations on two columns, one of brick and the other of stone, the latter of which was standing in his day. Hesiod's works were originally written upon tables of lead; Solon's laws upon wooden planks, &c.; and the Parian Chronicle, or a chronicle of the affairs of Athens, on marbles, which are now known by the name of the Arundelian. The Scythians, Celts, and their several descendants, the Goths, Teutones, &c. also used to write on trees whatever they thought worthy to preserve in writing. Tables of wood, box, and ivory, were also common among the ancients; but we find that the Romans were accustomed to write upon tables of wax, by means of a style or bodkin, so contrived that they could also erase what they pleased. The finest and thinnest parts of the bark of trees, as of the lime, the ash, the maple, and the elm, were also employed, whence the Latin name liber signifies both book and bark. The English word book is derived immediately from the Saxon boec, Low German bok, High German buch; and is either from buch, which signifies a beech, because the bark of this kind of tree was used; or from biegen, to bend, because the leaves were folded or bent into the form of a book. When books were rolled up, they were on that account called volumen, a volume, a name afterwards given to paper and parchment folded together. Sometimes the roll consisted of several sheets of bark fastened together and rolled upon a stick, called an umbilicus. Before the introduction of printing, books were become so scarce in the middle ages, that, in Spain, one and the same copy of the Bible, St. Jerome's Epistles, and some few volumes of ecclesiastical offices, served several different monasteries. Since that period the increase of books has been prodigious; and in consequence of the different editions, modes of printing, size, type, and other particulars connected either with the external form or internal contents, the knowledge of books has become a particular study and pursuit, under the name of bibliography.

BOOKBINDING. The process of binding books, or putting the sheets together into the form of books. The bookbinder receives the sheets which compose a book immediately from the printer, and after having folded them in the order of the signatures, or letters at the bottom of the page, they are first beaten with a hammer on a stone, to make them lie close and smooth; after which they are put into a press, and sewed with bands, or strips of leather fastened at certain distances, which, being all glued together very firmly, form the back of the book, to which the pasteboards are attached by means of the bands, so as to form the sides. In all this process of fixing on the sides, much art and nicety is required in rounding the back, and keeping the whole firmly fixed in the press. After this the book is put into the cutting-press between two boards, one lying even with the press for the knife to run upon, the other above for the knife to run against. In this manner the leaves and boards are cut to form an even edge. The next operation is the sprinkling of the leaves, which is done by means of a brush dipped in vermilion and sap green. The covers of leather, &c. being first moistened, are cut to the size of the book, smeared with paste, and then stretched successively over the back and the two sides, after having taken off the four angles, and indented and platted the cover at the head band. When thus far finished, the book is covered and bound between two bands and set to dry. It is afterwards washed with paste and water, and then sprinkled with a brush, unless it is to be marbled, which is done by making spots with vitriol. The book is then glazed with the white of an egg, and, lastly, polished with a hot iron. The letters and ornaments are made with gilding tools, or brass cylinders, rolled along by a handle: to apply the gold, the leather is glazed with a liquor made of the white of eggs, diluted with water, and when nearly dry the gold is laid on. Such is the process when a book is fully bound; but books may sometimes be only sewed and have a

paper cover, when they are said to be sewed; sometimes the boards are covered with paper only, when they are said to be in boards; and sometimes they have a leather covering on the back, extending a small way over each side, when they are said to be half bound.

BOOK-KEEPING. The art of keeping accounts, or recording the mercantile transactions of a man, so that he may thoroughly know the whole state of his affairs, or any part of them, with ease and despatch. Accounts may be kept either by single or double entry; the former of which may answer the purpose where the dealings are on a small scale; but merchants, whose concerns are extensive, keep their books according to the double entry, or Italian method. In single entry, two books only are wanted, namely, a journal, or day book, in which the transactions of the day, as they occur in the course of business, are entered; and the ledger, or post book, in which all the accounts drawn out of the journal are placed under the proper name, either on the debtor or creditor side. Those who keep their accounts by double entry, have occasion for several books, the three principal of which are, the waste book, the journal, and the ledger. The waste book is a book containing an inventory of a merchant's effects and debts, with a distinct record of all his dealings. The act of placing any transaction under a given account is called the entry; if placed on the Dr. or debtor's side, it is debiting the account; if placed on the Cr. or creditor's side, it is crediting. The waste book opens with the inventory, which consists of two parts, namely, in the first place, of a man's effects, and what is due to him; and in the next place, what is due by him. After the inventory follow the daily transactions as they occur in business. The accounts of persons are debited under their respective names when they become indebted to the merchant, and credited when the merchant becomes indebted to them. Accounts of property are debited when they come into his possession, and credited when they go out of it. In the same manner, the accounts of profit and loss are kept, which are debited on account of a loss, and credited on account of a gain. Those marked Dr. are placed on the left side, and those marked Cr. on the opposite side, marked Contra Cr. This book should contain the names of persons with whom the merchant deals, the conditions of bargains, the terms of payment, the quantity, quality, and prices of goods, with every other particular needful to be recorded. The journal, or day book, is intermediate between the waste book and the ledger, wherein the transactions recorded in the waste book are prepared to be carried to the ledger, by having the proper debtors and creditors ascertained and placed in order. In the journal, persons and things are debtors to other persons and things as creditors, and in this it agrees with the ledger, but in other respects it agrees with the waste book. Every case or transaction entered into the journal, is called a journal post, or entrance. The ledger is the principal book, in which all the several articles of each particular account that lie scattered in other books, according to their several dates, are collected and placed together in such manner that the opposite parts of every account are directly set fronting one another, on opposite sides of the same folio; that is to say, the debtor, or debtor part, is entered on the left or debtor side of its own account, where it is charged debtor to the creditor part; and the creditor, or creditor part, is posted to the right or creditor side of its account, and made creditor by the debtor part. Hence it is that the Italian method of book-keeping is said to be by double entry, because every single case of the waste book requires to be entered twice in the ledger, that is, once for the debtor and once for the creditor. In addition to the above three books, most merchants have several other books, as the cash book, which contains in debtor and creditor all the cash that comes in and goes out; the debt book, in which are entered all sums that become due, either to be received or paid, by bills of exchange, notes of hand, &c.; besides this, some merchants require a book of invoices, a book of commissions, a book of orders or advices, &c. according to the nature of their transactions.

BOOKSELLER. One who deals or trades in books, particularly one who sells the books printed by others, as distinguished from the publisher, who sells the books that are printed on his own account. The bookselling business has always held a higher rank than any other common trade; and on the continent, as at Tubingen, Salisburg, and Paris, booksellers class with the members of the learned professions, and have the privileges of students at the university. On the introduction of printing, the bookseller, printer, and scholar, were one and the same person.

BOOKWORM. A little insect which breeds and eats holes in books, especially when damp.

BOOM. A sea term for a long pole to extend the bottoms of particular sails, as the jib boom, studding sail boom. The boom of a harbour, a strong iron chain thrown across a harbour, to prevent the entrance of an enemy.

BOOR. Properly, a peasant; particularly applied to the rude peasantry of Russia.

BOOT OF A COACH. The space underneath between the coachman and the body of the coach.

BOOTES. A northern constellation, consisting of fifty-four stars, according to Mr. Flamstead.

BORACIC ACID. An acid drawn from borax by combustion.

BORAX. A substance dug out of wells in Thibet, and imported into America from India.

It is sometimes in the form of solid grains, sometimes in large crystals, enclosed in a fatty matter. It is used in soldering metals.

BORDER, or BORDURE. An ordinary in Heraldry, so called because it borders round, and as it were hems in the field. Borders are charged with things natural and artificial, in the same manner as the field.

BORDERERS. Those who lived on the borders of England and Scotland, and were formerly engaged in perpetual hostilities.

BORE. The hollow of a piece of ordnance.

BORE-COLE, or CURLED COLEWORT. A hardy sort of kale, which is improved by the frost.

BORER. A piercer, or instrument to bore holes with.

BORING. The method of piercing the earth in search of minerals.

BORING MACHINE. An engine used for boring or perfecting the bores of cannon, cylinders for steam-engines, pipes, &c. It is a machine of great power and complexity. Boring the earth for water is a successful modern discovery of great importance.

BOROUGH. From the German burg; it formerly signified a fenced town, but is now taken for any corporate town that is not a city, and that sends members to parliament: in Scotland, there are still royal burghs, or boroughs, that are held of the king.

BOS. The generic name in the Linnæan system for all animals of the ox tribe, as the bison, buffalo, common ox, musk ox, &c.

BOTANY. The science which teaches the knowledge of plants, as to their discriminating characters, structure, growth, culture, diseases, and the like. Plants are distinguished into natural orders, as trees, the stems of which send forth branches from the middle and top: shrubs, the stems of which send forth branches from the bottom: undershrubs, when the stems of the shrubs perish: herbs, which bear flowers and seeds, and then die; if they die at the end of one year they are called annuals, if at the end of two years biennials, if they last three or more years they are perennials: fungi are fleshy, coriaceous, or woody: algæ, or seaweeds, have neither stems nor leaves: mosses, which have only leaves and fruit: ferns, that never send forth more than one leaf on a footstalk: grasses, which are distinguished by their stem, which is a culm or straw: lilies, which have a tuberous or bulbous root: palms, which have an arboreous stem, from which the leaves grow, and not the branches.

The parts of plants are distinguished generally into the root, the stem, the bud, the leaf, the inflorescence, and the fructification. The root is the part through which the plant derives nourishment from the earth; a plant is either annual, biennial, or perennial, according to the time that the root lasts. Roots are sometimes called *fleshy*, when they consist of a fleshy prolongation; *fibrous*, when they consist of many fibrous prolongations; *tuberous*, when they consist of a thick fleshy substance, as the potato; *bulbous*, when they consist of a bulb or fleshy body, provided with several coats, as the onion or the lily; *granulated*, when they have a cluster of little bulbs, as in the saxifrage; *creeping*, when they have a horizontal prolongation of the root growing under the earth, and sending forth new plants of its kind, as couchgrass.

The stem is the prolongation of the plant above the soil, proceeding from the root. The woody stem of trees is the trunk; that which is herbaceous is the stalk, and belongs only to herbaceous plants; but the stalk of grasses, rushes, and similar plants, is called the culm; and when the stalk bears flowers and fruits immediately from the root, and not leaves, it is a scape, as in the primrose and cowslip; the stalk which springs from the stem or branches, bearing the flower and fruit, is the peduncle or flower stalk; that which bears the leaf only is the petiole, or footstalk.

The bud is that part of the plant which contains the embryo of the leaves, flowers, &c., and serves as their hybernaculum, or winter receptacle. The bud is guarded by scales, and furnished with gum, or wool, as an additional defence. The moss bud is a roundish longish body, proceeding from the mother plant, and becoming itself a new one; the gongylus is a knob belonging to the seaweed, which falls off on the death of the mother plant, and becomes a new one.

The leaf is the herbaceous production from the ascending stem; when the stalk and leaf are so intimately connected that they cannot be distinguished, this is called a frond, as in the palms and the algæ. To the leaf belong several appendages, which serve either for ornament or some specific use, as the bracteæ, or floral leaf, that stands near or between the flowers, forming a tuft, as in the pineapple; the stipula, a small leaf that appears on the stem, in the place of a footstalk; the sheath, a prolongation of the leaf that rolls itself round the stem, as in grasses; the ascidium, or bottle, a foliaceous cylindrical hollow body, which is generally furnished with a cover, and contains water; the ampulla, or bladder, a round hollow body at the roots of water plants; the gland, a round body situated on the leaves, which serves as an organ of respiration; the spine, or thorn, that rises in the interior of the plant, as in the sloe; the aculeus, or prickle, that issues from the bark; the cirous clasper,

or tendril, a filiform body which serves to support weak plants, as in the vine, &c.; the arista, or awn, a pointed beard in grasses; the pili, hairs, fine slender bodies, which include all kinds of pubescence, as bristles, wool, &c. some of which discharge a poison, as in the nettle.

The inflorescence is the mode of flowering, which differs very much in different plants, and is distinguished into verticillus, the whorl, which consists of several flowers, standing at intervals, surrounding the stem, as in the mint; the racemus, the raceme, a peduncle with short lateral branches, as in the currant and the vine, &c.; the corymbus, or corymb, an erect raceme, the lower peduncles of which are so lengthened as to be of equal height with the upper; when the peduncles take their rise from the same centre, but the subdivisions are irregular, it is a cyme; when the peduncles rise from the same centre, but the whole is disposed in regular order, it is an umbel; the capitulum has many flowers, standing thick, so as to form a head, as in the globe amaranth; the fasciculus, fascicle or bundle, a number of simple peduncles rising at the foot of the stem from several points, as in the sweetwilliam; the spica, or ear, as in wheat and barley; the panicula, or panicle, in which the flowers or fruits are scattered on branches unequally divided, as in the oat grass; the spadix, so called from the spadix vagina, or sheath, which contains the flower stalks; the amentum, or catkin, a long stem thickly covered with scales, under which are the flowers or essential parts, as in the willow and hazel; the sorus, or mass, an inflorescence peculiar to the ferns, which have masses of seed capsules in their fronds.

The fructification consists of the flower and the fruit. The principal parts of the flower are, 1. The calyx, or flowercap, or envelope of green leaves, which, when it immediately encloses the flower, is a perianth; when it contains many flowers in one is an anthodium; when it consists of many leaves surrounding the flower, as in umbelliferous plants, is an involuere. The calyx of grasses is called the glume; when it rolls itself round the stem, as in some grasses, it is called the vagina, or sheath; and in some aquatic plants the spatha, or spathe. 2. The corolla, or blossom, the envelope of small leaves of various colours which constitute the flower properly so called; the divisions of the corolla are called the petals; the parts of the corolla are the tubus, the tube, the hollow under part of a corolla that has but one petal; limbus, the border or opening of the corolla; labia, the lips; barba, the beard; rictus, the gape between the extremities of the lips; faux, the throat or the opening of the tube; nectarium, the nectary, which commonly serves to secrete a sweet juice; this is sometimes in the shape of a hood, and is called the cucullus, or hood, as in the aconite or monkshood; sometimes in the shape of a spur, called calcar, as in the violet; also in that of an arch, a crown, &c. 3. The stamen is an essential part of the flower, which consists of the filament or thread that supports the anther; anthera, the anther, a hollow cellular body; and pollen, the powder or fine dust contained in the anther. 4. The pistil, the second essential part of a flower, stands in the centre of the circle formed by the stamen, and consists of the germen, the rudiments of the future fruit or seed; the stylus, style or shaft, a small stalk seated on the germen; and the stigma, the top of the style.

The fruit proceeds from the germen, and consists of, 1, the pericarpium, pericarp, or seed vessel, a hard hollow body, that is of different kinds, as capsula, a capsule, or thin coat, divided into cells; a siliqua, or pod, a dry elongated pericarp, consisting of halves or valves, as in the mustard; the legumen, the legume, as in the pea kind; nux, the nut, a pericarp covered with a hard shell; drupa, or drupe, a nut covered with a fleshy coat, as in the plum; bacca, the berry, a succulent fruit containing many seeds, as the gooseberry, the currant, &c. 2. The semen, or seed, that part of the plant destined for propagation, consists of different parts, as the cotyledones, cotyledons or seed leaves; corculum, the circle or little heart, the germ of the new plant; hylum, the eye, the deep scar in the seed which has been occupied by the circle; plumula, the plumule, or that part of the circle which ascends to form the leaves; rostellum, the other part of the circle, which descends to form the root. Besides, the seed is furnished with different appendages, as arillus, the aril, a soft membrane extended over the seed; pappus, the down; cauda, the tail; rostrum, the beak; and various spines, or hooks, &c. which serve to attach the seeds to different bodies, and promote their dispersion. 3. The basis, or base, is the receptacle or body on which the flower stands, the principal part of which is the thalamus, or fruit bed; when this is round or oblong it is called pelta, a target; when plateshaped, scutella, a shield; when convex, tuberculum, &c.

Besides the science of botany comprehends also a knowledge of plants as to their vegetation, anatomy, chymical composition, and diseases, which are all included under the physiology of plants. The vegetation of plants may be distinguished into germination, when the seed begins to burst; vernation, when the buds begin to burst; virginity, when the flowers or buds are not yet unfolded; defoliation, when the leaves in autumn begin to fall off; sleep, when during the night the leaves hang down; æstivation, when the flower is in perfection; fructification, when the anthers communicate the fructifying dust to the neighbouring parts.

The anatomical structure of plants comprehends the cuticle; the cortex, or outer bark; the liber, or inner bark; liburnum, or soft wood; lignum, the wood; medulla, the pith; the air vessels, which are the conductors of the air; the

adducent or spiral vessels, which proceed with or are entwined round the air vessels; the reducent vessels, which are supposed to serve the purpose of transpiration; the lymphatics, which are reticularly united; the cellular texture, a delicate membrane surrounding all the vessels, and containing a resinous juice, as in the fir tribe, and a gummy juice in fruit trees; the glands, which serve as secretory vessels.

The principal chymical constituents of plants are carbon, hydrogen, and oxygen, but chiefly the former, besides which azote, sulphur, and other simple substances, may be found in small quantities. The principal compound substances which form the sensible ingredients of plants are, the acids, mucilage, sugar, starch, albumen, gluten, fixed and volatile oil, wax, resin, camphor, &c.

The principal diseases to which plants are incident, are, fissures, or a separation of the solids into long clefts, arising from an extreme fulness of juice; premature defoliation, when the leaves fall off before the usual period; albigo mildew, a whitish mucilaginous coating of the leaves of plants, which causes their decay; rubigo, rust, which appears on the leaves and stems of many plants; lepra, leprosy, which affects the trunk; gallæ, galls, occasioned by flying insects; verrucæ, warts; besides hemorrhage, canker, exulceration, &c.

BOTANY, History of. As the practice of cultivating plants both for pleasure and utility was coeval with the first formation of man, it is natural to suppose that the science of botany was one of the earliest studies which engaged the attention of inquirers. Aristotle, in his history of animals, has many remarks on plants, drawing a comparison between their mode of growth and that of animals, and pointing out in what animal and vegetable life agree and in what they differ. His disciple, Theophrastus, has devoted a whole work to his favourite subject, and has not only marked the distinctions between trees, shrubs, herbs, and flowers, but treated of the different parts of plants, as the root, stem, leaf, and fruit; showing their diversity in form, habit, colour, mode of growth, and other interesting particulars, which he has illustrated by giving the names of not less than five hundred different plants, by way of example. Except the descriptions or allusions of the poets to favourite plants, there is nothing further to be found on the subject of botany until the time of the Romans. Virgil, in his Georgics, speaks of the uses and culture of several plants connected with husbandry. Pliny, in his Natural History, describes not less than one thousand species of plants, but without any other order than in connexion with the places where they were indigenous. Antonius Musa describes the virtues of the plant betony. Columella treats of plants in an agricultural point of view. Dioscorides, Galen, Onbasiris, Paulus Ægineta, and Aetius, have described the medicinal virtues of plants much at large. After these writers the subject of botany appears to have been almost forgotten, otherwise than it was pursued by the Arabians in conjunction with the science of medicine. In Europe, at least, we find that it was altogether neglected until the sixteenth century, when a number of botanists sprung up in Germany, England, Holland, Italy, and France, who, as their works testify, prosecuted the subject with great zeal. Prosper Alpinus wrote several books on the plants of Egypt and other exotics. Clusius, a French botanist, wrote on the rarer kind of plants. Many other botanists in this and the following centuries wrote general histories of the plants which came within their observation, particularly Cæsalpinus in his work De Plantis, libri xvi.; Delechamp, in his Historia Generalis Plantarum; J. Bauhin, in his Historia Plantarum; C. Bauhin, in his Phytopinax; Gerarde, in his Herbal; Parkinson, in his Theatrum Botanicum; Ray, in his Historia Plantarum; Commelinus, in his Hortus Malabaricus; Tournefort, in his Institutiones Rei Herbariæ; Boerhaave, in his Index alter Plantarum Horti Academici Lugduni; Vaillant, in his Botanicon Parisiense; besides Fuchsius, Matthiolus, Dodonæus, Camerarius, Bregnius, Rheedius, Brunfels, Plukenet, Plumier, &c.

Cæsalpinus, in the sixteenth century, was the first who properly systematized botany. He formed fifteen classes from the fruit and the situation of the corculum. Since his time many systems have been formed from different parts of the plants. Ray chose the flower, fruit, and external appearance of the plants, for the foundation of his system. Camellus framed a system from the valves of the capsule, calling his classes pericarpia, fora, unifora, bifora, &c. Rivinus selected the corolla, dividing the plants into flores regulares, compositæ, and irregulares, and these again into monopetali, dipetali, &c. Haller formed a natural system from the cotyledons, the calyx, the corolla, the stamina, and the sexes of the plants; but the system most generally adopted before the time of Linnæus was that of Tournefort. He divided plants into herbæ et suffrutices, arbores et frutices, and these again into herbæ floribus monopetalis, campaniformibus, infundebiliformibus, &c.

Linnæus, the most eminent naturalist of all who went before him or followed after him, was born the beginning of the eighteenth century, and having devoted his attention to the vegetable as well as the animal and mineral kingdoms, framed a system for the whole, called after him the Linnæan system, which has been universally adopted by scientific men in all parts of the world. His system is composed of classes, orders, genera, species, and varieties. The class is the largest of all the divisions, having under it the orders as subdivisions: the genera are contained in the order,

the species in the genera, and the variety in the species. This system, as respects plants, is also called the sexual system, because it embraces the sexes of plants in the scheme. The classes, twenty-four in number, are distinguished either according to the number or situation of the stamens, filaments, anthers, or male and female flowers, in each plant, as monandria, for those having one stamen; diandria, for those having two stamens; triandria, for those having three stamens; so tetrandria, pentandria, hexandria, heptandria, octandria, enneandria, and decandria, for those having from four to ten stamens. Those having from eleven to seventeen stamens were included under the class dodecandria; those having many stamens inserted in the calyx under the class icosandria; those having twenty stamens and upwards under polyandria; those having four stamens in one flower, two longer than the others, didynamia; those having six stamens, two shorter than the rest, tetradynamia; those having their filaments connected into the form of a cylinder or tube, monodelphia; those having two such cylinders, diadelphia; those having the anthers formed into a tube, syngenesia; those having the stamens standing in the style, gynandria; those having stamens and pistils in separate flowers, but in one plant, monoecia; those having the stamens and pistils in separate plants, dioecia; those having stamens and pistils separate in some flowers and united in others, polygamia; those having these parts of fructification either not well ascertained, or not to be numbered with certainty, cryptogamia.

The orders, or subdivisions of the classes, from the first to the thirteenth class inclusive, are marked by the number of pistils in each plant, as monogynia for those having one pistil, so digynia, trigynia, tetragynia, pentagynia, hexagynia, and polygynia, for those having two, three, four, five, six, seven, or more pistils. The two orders gymnospermia, for those having the seed naked, and angiospermia, for those whose seeds are contained in a pericarp, belong to class didynamia; the two orders siliculosa and siliquosa, for those whose seeds are contained in a siliqua of different sizes, belong to class tetradynamia. In most of the other classes the orders are marked by the number of stamens in each plant, except syngenesia, in which the orders polygamia æqualis, polygamia superflua, polygamia frustanea, polygamia necessaria, and polygamia segregata, mark the connexion of the flower. Under the last class, cryptogamia, are contained four orders, filices, the ferns; musci, the mosses; algæ, the seaweeds; and fungi, the funguses, or mushrooms.

BOT-FLY. An insect which lays its eggs on the hair of horses, where they stick fast, and appear like very small yellow nits; these being licked off by horses, are swallowed by them with their food, and carried into the stomach, where they hatch into magots, and destroy the horse, by eating through his stomach.

BOTTOM. The ground, or lowest part of any thing; as the bottom of a vessel, or the bottom of the sea, or a harbour; whence the phrases, 'to go in foreign bottoms, speaking of ships; 'sandy gravelly bottoms,' speaking of harbours, &c.

BOTTOMRY (in Commerce.) Borrowing money on the bottom of a ship; that is, when the master of a ship engages that if the money so borrowed be not paid by the time appointed, the ship itself shall be forfeited; also, the lending money to a merchant on any adventure, the interest to be paid on the return of the ship, but to be lost if she is lost.

BOTS. Worms that breed in the intestines of horses.

BOULDER WALLS. Walls built of round flints or pebbles.

BOUND. A sea term for a ship confined to a particular spot or direction; as wind bound, ice bound, homeward bound.

BOUNTY. A sum of money given by government to men who enlist as soldiers.

BOUTS-RIMES. Certain rhymes disposed in order, and given to a poet, together with a subject, to be filled up with verses ending in the same word and in the same order.

BOW and ARROW. A weapon of war, used by most nations before the invention of gunpowder. The English particularly excelled in its use, and they were of various forms, but that which is represented was the most common.

BOW. A sea term for an instrument fixed on a staff, with vanes, for taking the sun's altitude at sea; also, the rounding parts of the ship's side, distinguished by the starboard and leeboard into the weather and lee bow.

BOW. The name of several things so called from their curved figure, as the bow of a key, the arched part to receive the finger; the bow of a saddle, the piece of wood on each side, laid archwise to receive the upper part of a horse's back; bow of a violin, the round stick furnished with hair, with which the performer plays.

BOWSPRIT. A mast projecting over the stem or head to carry the sail forward.

BOX. A plant, which is of two kinds, namely, the dwarf box that is used for borders in gardens, and the box tree, which is a shrub or tree. The wood of this is yellow and hard.

B. R. An abbreviation for Bancus Regis, the Court of King's Bench.

BRACE. What holds a thing tight, as the braces of a drum; in Carpentry, a piece of timber, which serves to keep the frame work tight; in Printing, a crooked line marked thus, } which serves to enclose words that are to be together.

BRACELET. An ornament for the arm or wrist; also, a piece of defensive armour for the arm.

BRACHMAN, or BRAMIN. The first of the four tribes of the Hindoos, and those devoted to learning and theology, in which they practise many impostures, absurdities, and gross superstitions. One engraving represents their god Brahma, as sculptured in their places of worship; the other represents some of their devotees inflicting self-torments.

BRACKET. A kind of stay in the form of a knee, or shoulders on which shelves are made to rest; also, in Shipbuilding, a kind of knee for the support of the gratings.

BRADS (among Artificers.) A kind of nails used in building, which have no heads like other nails, as joiners' brads, flooring brads, batten brads.

BRAIN. The soft contents of the cranium, or skull, consisting of the cerebrum, cerebellum, and medulla oblongata, which are surrounded by three membranes, called meninges, or mats, as the dura mater, pia mater, and arachnoides. The substance of the brain is distinguished into outer and inner; the former is called corticalis, cenerea, or glandulosa; the latter, medullaris, alba, or nervea. It is generally supposed to be the seat of the soul, or that part where all the senses terminate.

BRAN. The husk of ground wheat.

BRANCH. A shoot from the main bough of a tree; also, several things similar in figure, as the antlers or shoots of a stag's horn; the branches of veins, branches of a river, branches of a bridle, that is, the two pieces of bended iron that bear the bit-mouth, the chains, and the curb.

BRANCHIÆ. Gills in the anatomy of fishes, organs of respiration answering to the lungs in other animals, with which all fishes are provided, except the cetaceous tribe and the lamprey. They are eight in number, and serve the fish to take in and throw out water with the air.

BRANCHIOSTEGIOUS. An order of fishes in the Linnæan system, including such as have gills without bony rays, as the pipe fish, sucker, frog fish, &c.

BRANDY. A spirituous and inflammable liquor, made from the lees of wine by distillation. Its constituent parts are water, alcohol, and a little oil of resin. Brandy is said to have been first manufactured in Languedoc.

BRANT-FOX. A sort of black and red fox.

BRASS. A factitious compound metal, of a yellow colour, consisting of copper and about one third of its weight of zinc.

BRAWN. The muscular or fleshy part of the body, particularly that of the boar.

BRAZIL WOOD. A sort of wood so denominated because, as is supposed, it was first brought from Brazil. It is red and heavy, so as to sink in water, takes a good polish, and yields beautiful orange and red colours, which are used by dyers. When chewed it has a sweetish taste.

BRAZILIAN. A native of an extensive empire of South America, celebrated for its

diamonds and other precious stones, which are found in the sands of the rivers. The climate is temperate and healthy, and the soil generally fertile. The interior abounds in wild horses, horned cattle, and poisonous serpents. The population of the southern part, and along the coast, are principally whites, the remainder being inhabited by Indians, who are very hostile to the whites. Rio Janeiro, the capital, is well situated for trade, has an extensive commerce, and contains about 100,000 inhabitants.

BRAZILIAN PANTHER, or TIGER. The size of a wolf, and as sly and destructive as those of Asia and Africa.

BREACH. A gap made in the works of a town by the besiegers.

BREACH (in Law.) The violation of a contract; breach of pound, is the breaking any place where cattle are distrained; breach of prison, an escape by breaking out of prison.

BREAD. A preparation of flour mixed with water, fermented with yest, and baked in an oven, brown or white, according to the quality of the flour; water gives flour consistency, but yeast separates the parts, and makes it eatable.

BREAD-FRUIT TREE. A native of the South-Sea Islands. It grows to the thickness of a man, and upwards of 40 feet high. The fruit is the size and shape of a child's head, the surface reticulated, covered with a thin skin, with a core the size of a small knife-handle; the eatable part is between the skin and core; as white as snow, and of the consistence of new bread. When perfectly ripe, it is pulpy, sweetish, putrescent, and, by some, thought to be too laxative; but, when green, it is farinaceous, and esteemed very wholesome food, either baked under the coals, or roasted over them.

BREAK. A sea term for that part of a deck where the descent to the next deck below it commences; in Printing, the short line which ends a paragraph.

BREAKERS. Billows that break violently over rocks that lie under the surface of the sea.

BREAKING GROUND. A military term for opening the trenches and beginning the works for a siege.

BREAKING IN. The discipline of first training a colt to be useful.

BREAKWATER. The hull of a vessel, or any erection of wood or stone, placed at the entrance of a harbour to break the force of the water.

BREAM. A fish of the carp kind, of a rapid growth, and has a broad body. The Sea Bream, otherwise called the Red Gilt Head, is a fish of a red colour, with the iris silvery.

BREAST. The anterior part of the thorax.

BREASTFAST. A sea term for the large

rope employed to confine a ship sideways to a wharf or quay.

BREASTPLATE. A piece of defensive armour worn on the breast; in Horsemanship, a leathern strap running from one side of the saddle, across the horse's breast, to the other, to keep it in its place.

BREAST PLOUGH. A sort of plough which is driven forward by the breast, and is used in paring off turf from the land.

BREASTWORK. A military term for works thrown up as high as the breast of the besieged; a sea term for the balustrade of the quarter deck.

BRECCIA, or PUDDING-STONE. A sort of aggregate earth, consisting of fragments of stones conglutinated.

BREECH. The hinder part of a gun, from the cascabel to the bore; also, a sea term for the angle of knee timber in a ship.

BREEDING. That part of husbandry which consists in the rearing of cattle or live stock of different kinds, particularly by crossing or mingling one species or variety with another, so as to improve the breed.

BRESSUMMER. A binding interstice or girder to different parts of a house.

BREVET. A military term for promotion in the army without additional pay or duty.

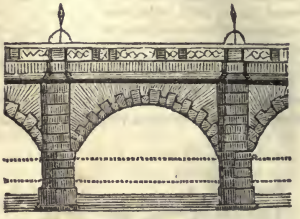
BREVIARY. A book containing the daily service of the Romish church.

BREWING. The art of making malt liquor, such as ale, beer, porter, &c. which much resembles the process of making tea. The proper ingredients used in brewing are malt, hops, and water, in certain proportions, according to the required strength of the liquor. Eighteen gallons of good ale and nine gallons of table beer, may be drawn from a bushel and a half of malt; but to make strong beer only six gallons are reckoned to one bushel of malt. Among the pernicious and unlawful ingredients used by brewers, are an extract of the coculus indicus, hartshorn shavings, ginger, Spanish juice, orange powder, liquorice, caraway seeds, and sulphuric acid.

BRIBERY. The receiving of any reward or gift for corrupt purposes.

BRICK. An artificial kind of stone, composed of clay, coal ashes, and sand, duly mingled together, dried by the sun and hardened by the fire. Bricks are distinguished, according to their quality, into marls and stocks, which latter are either gray or red, according to the colour of the earth.

BRIDGE. A structure raised over rivers, &c. and consisting of one or more arches. The principal parts of a bridge are the piers, or walls, built for the support of the arches; the parapet, or breastwall, made to protect the passengers, the banquet, pavement, or raised footpath, and the abutments or extremities of the bridge, which rest on the banks. The principal arches employed in bridge building, are those of the semicircular or elliptical form, the catenarian arch, and the arch of equilibrium, which last is esteemed to be the best, because it is equally strong in every part.



BRIDGE. A military term for any contrivance by which soldiers can cross a river, as a bridge of boats, formed by boats joined sideways, and covered with planks; or a bridge of rushes, formed of bundles of rushes bound fast together and covered with planks. Such temporary bridges are called flying bridges.

BRIDGE. The name of several things similar in figure to a bridge; as the bridge of the nose, the gristle which parts the nostrils; the bridge in a violin, &c. the perpendicular arch which supports the strings; the bridge, among Gunners, is the name for the two pieces of timber which go between the transoms of a gun carriage on which the bed rests.

BRIDLE. A part of the furniture of a horse's head, which serves to guide the animal. The principal parts are the bitt, or snaffle, which goes into the horse's mouth; the curb, or chain of iron, that runs over the beard of the horse; the head-stall, or leather that goes round the head; the fillet, that lies over the forehead; the throatband, that goes under the throat; and the reins, which serve for the rider.

BRIEF (in Law.) An abridgement of a client's case, made out for the instruction of counsel on a trial at law.

BRIEF (in Music.) A measure of quantity, which contains two strokes down in beating time, and as many up.

BRIG. A merchant's vessel with two masts.

BRIGADE. A military term, for a party or division of soldiers, whether horse or foot, under the command of a brigadier.

BRIGANTINE. A small light vessel, which can both row and sail well, being adapted either for fighting or for chase.

BRIMSTONE. The vulgar name for sulphur.

BRINE. Water impregnated with salt.

BRISKET. That part of the breast of an animal that lies nearest the ribs.

BRISTLE. The hair of swine, which is much used by brushmakers, particularly that imported from Russia.

BRISTOL HOT WATER. Mineral waters of the lowest temperature of any in England, the constituent parts of which are carbonic acid, gas, lime, and magnesia, besides the muriatic and vitriolic acids.

BRITANNIA. The name given by the Romans to the island of Britain, which is represented on their medals under the figure of a female resting her left arm on a shield.

BROADSIDE. A sea term, for a discharge of all the guns on one side of a ship.

BROADSWORD. A sword with a broad blade, chiefly designed for cutting.

BROCADE. A kind of stuff or cloth of gold.

BROCOLI. An Italian plant of the cauliflower kind.

BROGUE. A defective pronunciation of a language, particularly applied to the Irish manner of speaking English.

BROKEN LETTER. A term in Printing for the breaking the orderly succession in which the letters stood in a line or page, and mingling them together; technically, pi.

BROKER. A name applied to persons of several and very different professions, the chief of which are exchange-brokers, stock-brokers, and brokers who sell household furniture.

BROKERAGE. What is paid to a broker for his trouble.

BROME GRASS. A sort of grass much resembling the oat; whence it has also been called oat grass.

BRONZE. An alloy of two thirds copper and one third brass.

BRONZING. The art of varnishing wood, plaster, and ivory, so as to give them the colour of bronze.

BROOM. A flowering shrub, having a papilionaceous flower, which becomes a short roundish swelling pod, containing a kidney shaped seed in each.

BROOM. A besom, which is frequently made of the broom, and serves for sweeping a house.

BRUMAL. The winter quarter of the year, beginning at the shortest day.

BRUTA. The second order of animals of the class mammalia in the Linnæan system, comprehending those animals which have no fore teeth in either jaw, as bradypus, the sloth; mymycophaga, the ant-eater; rhinoceros, the rhinoceros; elephas, the elephant, &c.

BRUTE-WEIGHT. A term employed when merchandises are weighed with the cases, &c. in distinction from the net weight.

BUBBLE. A bladder in water, or a vesicle filled with air; also any idle or cheating project, such as the South Sea bubble in 1720, and numerous projects of a similar character which have been set afloat within the last few years, to the ruin of many.

BUCCANEERS. Pirates or freebooters; a race of adventurers who committed great depredations in the 16th and 17th centuries.

BUCK. A male deer of the fallow kind; also a male rabbit.

BUCKET. A kind of pail, made of leather.

BUCKLE. A fastening for a shoe, or the harness of a horse, by means of an iron tongue within a hoop.

BUCKLER. An ancient piece of defensive armour, made of wicker work, and worn on the arm.

BUCKRAM. A sort of stiffened cloth.

BUCKWHEAT, otherwise called Brank. A sort of grain that is used as food. The flowers grow in a spike, or branched from the wings of the leaves.

BUCOLICS. Pastoral poems, so called from the Bucolica of Virgil.

BUD. That part of a plant which contains the embryo of the leaves, flowers, &c.

BUDDHA. The name of the deity among the Hindoos.

BUDDLE. A frame to receive the mineral ore after it is separated from the coarser parts.

BUDGEROW. An ornamented barge in India.

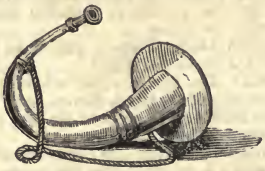
BUDGET. Properly, a bag or knapsack that may be easily carried; also the annual statement of the finances made by the Chancellor of the Exchequer in the House of Commons in England.

BUFF. A sort of thick leather prepared from the skin of the buffalo.

BUFFALO. An animal originally from India, but now found in most of the warm-

er countries of the eastern continent; it is larger than the common ox, and is fond of rivers and marshy places. It has horns resupinated and flat on the fore side, a tough skin, black hair, small head, and no dewlap. They are numerous in the northwestern parts of the United States. The Indians take them in great numbers, by driving them into large enclosures, as represented in the engraving.

BUGLEHORN. A horn formerly used much in hunting, and now in armies.



BUILDING. The art of raising buildings according to given designs, which is properly practical architecture; also, the structure so raised.

BULB (in Botany.) A kind of large subterraneous bud, though sometimes appearing above ground, upon or near the root of certain herbaceous plants, which are therefore denominated bulbous. Linnæus considers the bulb as the winter-quarters of the future vegetable, because every bulb contains, in miniature, or embryo, a plant, in all respects, similar to its parent.

BULBOUS PLANTS. The name of such plants as have a fleshy, scaly root, called a bulb, as the leek, onion, &c.

BULGED. A sea term, for a ship when she has struck off some of her timbers upon a rock or anchor.

BULK. The whole contents of a ship in her hold.

BULL. A brief or mandate issued by the Pope, and sealed with the bulla, a leaden or gold seal.

BULL. The male of neat cattle. A well known domestic animal, remarkable for strength and courage. The engraving represents one of the short-horned, and one without horns.

Galloway Bull.

BULL-DOG. A dog of true English breed, so called from his property of attacking the bull, whence he was formerly used in the cruel sport of bullbaiting.

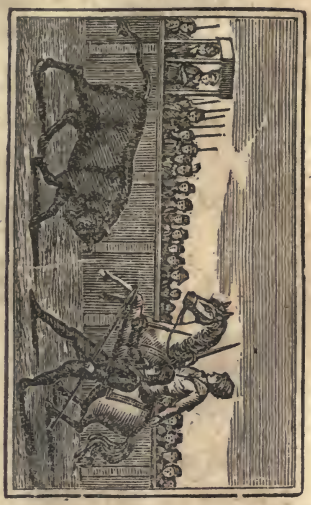
BULLET. A name for the leaden balls with which small fire arms are loaded.

BULLETIN. An official account of public transactions or matters of general interest.

BULIMY. A disease in which the patient is affected with an insatiable and perpetual appetite for food, and unless he is indulged, he falls into fainting fits.

BULL-FIGHT. An atrocious diversion, still practised in Spain; and, till lately, among

the lowest people in England, under the name of bull-baiting.



BULLFINCH. A bird of the sparrow kind, whose breast, cheeks and throat are of a crimson colour. The nest is principally composed of moss, and the eggs, which are five or six in number, are of a bluish white colour, marked at the large end with dark spots. The time of breeding is about the end of May, or the beginning of June; and in summer its principal residence is in woods; but in winter it approaches gardens and orchards, and is, perhaps, unjustly stigmatized for destroying the buds of trees, though it appears that its object is not the bud itself, but "the worm in the bud," and that the bullfinch is one of those species of birds that defend the embryo fruit, by destroying the nests of innumerable insects.

BULL-FROG. A remarkable species of the frog in North America, so called because its voice resembles the distant lowing of an ox.

BULL-HEAD. A sort of fish, having its head much broader than its body.

BULLION. Gold or silver in the mass, before it is wrought into coin.

BULL'S EYE. A mark in the shape of a bull's eye, at which archers shoot by way of exercise.

BULL-TROUT. A sort of salmon, about two feet in length.

BUM-BOAT. A sort of wherry used about harbours, to carry provisions, &c. for sale to ships lying at a distance.

BUNGALOW. A house with a thatched roof in India.

BUNT (a Sea Term.) The middle part of a sail formed into a sort of bag, or hollow, that the sail may gather more wind.

BUNTLINES. Small lines which serve to force up the bunt of the sail for the better furling it up.

BUOY. A short piece of wood or close hooped barrel, fastened by a rope to the anchor, to point out its situation. It is also a piece of wood or cork fastened by a chain, serving to point out dangerous places.

BUPHAGA, or BEEFEATER. A sort of bird of the order picæ, found in Africa. It is so called because it alights on the backs of cattle, and picks holes in them to get at the larvæ of the gad-fly, on which it lives.

BUPRESTIS. An insect of the coleopterous order, remarkable for the brilliancy of its colours, which emulate the polish of the finest metals.

BURDEN (a Sea Term.) Whatever can be stowed in a hold, or the number of tons which it can carry. Beasts of burden, in Husbandry, are those which are fitted for bearing burdens or drawing weights.

BURGESS. An inhabitant of a borough, or one who possesses a tenement therein; it is now more commonly taken for the representative of a borough town.

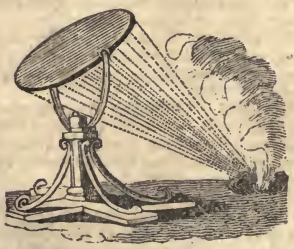
BURGLARY (in Law.) The breaking and entering the dwelling of another in the night, with the intent to commit some felony,

whether the felonious intent be put in execution or not.

BURGOO. A kind of porridge, is a nutritive dish, eaten by mariners, and much used in Scotland; it is made by gradually adding oat-meal to boiling water, stirring it constantly, so that the whole may mix smoothly; after which a little salt and butter should be added. It is considered very proper for correcting that unwholesome disposition to costiveness, so frequent to persons of a sea-faring life.

BURGUNDY PITCH. The juice of the fir tree boiled in water, and strained through a linen cloth.

BURNING-GLASS. A concave or convex glass, commonly spherical, which collects the rays of the sun towards a common point, called the focus. Those burning glasses which consist of refracting convex lenses appear to have been but little known to the ancients, but the burning mirrors which consist of concave reflecting surfaces must have been brought to great perfection, if what is related by some historians be true, for we are informed that Archimides set fire to the fleet of Marcellus when he was besieging Syracuse; and that Proclus, in the same way, destroyed the navy of Vitellius at the siege of Byzantium. Among the moderns, Lord Napier was one of the first who conceived the idea of making such burning glasses, which have since been constructed of a prodigious size. The burning glass of M. de Villette was three feet eleven inches in diameter, and it burnt at the distance of three feet two inches; by it were melted a silver sixpence in seven minutes and a half, a King George's half penny in sixteen minutes, which ran in thirty-four minutes; a diamond weighing four grains lost seveneighths of its weight. That of Buffon was a polyhedron, six feet broad, and as many high, consisting of one hundred and sixty-eight small mirrors, or flat pieces of looking glass, each six inches square, by means of which, with the faint rays of the sun in the month of March, he set on fire boards of beech wood at one hundred and fifty feet distance.



BURNING OF WOMEN. A superstitious practice in India for the widows to burn themselves on the funeral piles of their husbands. (See SUTTEE.)

BURNISHER. A round polished piece of steel, serving to smooth and give a lustre to metals.

BUSS. A small vessel, used in the herring fishery, about 50 tons burden.

BUSHEL. A dry measure, containing four pecks, or eight gallons.

BUSH-HARROW. An implement of husbandry for harrowing grass lands, and covering grass or clover seeds. It consists of a frame with three or more bars, in which bushes are interwoven.

BUSKIN. A kind of high shoe, anciently worn by tragedians; also, a sort of leather stocking, serving the purpose of a boot.

BUST. The figure or portrait of a person in relievo, showing only the upper parts of the body.

BUTCHER BIRD. A sort of shrike, remarkable for its ferocity towards the little birds, which it kills, and tearing them to pieces, sticks them on thorns.

BUTT. A measure of wine, containing 126 gallons.

BUTTEND. The largest end of a piece of timber nearest to the root.

BUTTER. A fat unctuous substance, procured from the cream of milk by churning; a term in Chymistry for substances of similar consistency, as butter of antimony, butter of bismuth, butter of wax, &c.

BUTTERBUR. A plant with a floscular flower, consisting of many florets.

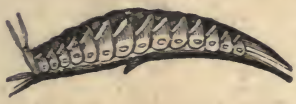
BUTTERFLOWER. A yellow flower, which abounds in the meadows in May.

BUTTERFLY, or PAPILIO. A genus of insects, of which there are many hundred species. Curious and elegant as they are, this is the last state of the varied existence of the same creature; first in the grub, or caterpillar form, in which it emerges from the eggs laid by a former generation; the grub then passes into an insensible state, called the chrysalis or aurelia, in which it continues some weeks or months, having neither legs, wings, nor motion: at length the case is burst, and moths and butterflies emerge, which pass a short and fluttering existence, during which they lay eggs for future successions of the same kind. That which seems to be powder upon the wings of this insect is an innumerable quantity of fea

thers, which are only to be discerned through a microscope.

Grub of the Butterfly.

Chrysalis of the Butterfly.



BUTTOCK. The breech or haunch of an animal, next to the tail; also, a sea term for that part of a ship which forms her breadth, right astern from the tuck upwards.

BUTTON. Any thing in a round form which serves to fasten, particularly what is used in garments; also, a part of the cascabel in a gun or howitzer, which is in the form of a button.

BUTTRESS. A kind of butment, built archwise, serving to support a building or wall.

BUZZARD. A very sluggish bird of the hawk kind. It will remain perched upon the same bough for many hours, and is generally found in one place. It feeds on small birds, rabbits, moles, and mice; but it will also eat frogs, worms, and insects. The colour of the buzzard is various: the breast and belly of some are brown, but more frequently the former is of a yellowish white, with oblong rust-coloured spots: the back of the head, neck, and coverts of the wings, are of a deep brown, edged with a pale rust colour; the tail is barred either with black, or ash colour.

There is another species, the æruginosus, or moor-buzzard, with a grayish body, and yellow legs. It makes its nest in a tuft of grass or among rushes, is a fierce and voracious bird, and a great destroyer of rabbits, young ducks, and other water-fowl.

BY-LAW. A private law made within some particular place or jurisdiction. All by-laws are to be reasonable, and for the common benefit, and must be agreeable to the public laws in being.

C.

C, the third letter and second consonant of the alphabet; as a numeral, C stands for 100, and CC for 200, &c.; in Music, it is the highest part in the thorough bass; as an Abbreviation, it stands for Christ, as A. C. Anno Christi, or ante Christum.

CAABA. The temple of Mecca, towards which Mahometans turn when they pray.

CABALA. A traditional or mysterious doctrine among the ancient Jews, which they say was delivered by word of mouth to Moses, and by him to the fathers. Among Christians, the cabala is an abuse of certain passages of Scripture for magical purposes.

CABBAGE TREE. A tree of the Cape of Good Hope, so called from the resemblance which its leaves bear to those of the cabbage plant.

CABIN. The apartment in a vessel for the officers and superior passengers.

CABINET. The secret council of a government.

CABLE. A sea term for a strong rope or iron chain, which serves to keep a ship at anchor.

CABLE'S LENGTH. The measure of 120 fathoms.

CACOETHES. An ill habit or propensity; as the cacoethes scribendi, an itch for authorship.

CACOPHONY. The harsh sound of two letters or syllables.

CADENCE (in Grammar.) The fall of the voice; also, the flow of verses or periods; in Music, it is a pause or suspension at the end of an air, resembling points or virgules in prose; in Dancing, cadence is used when the steps follow the notes and measures of the music; in the Manege, the cadence is the measure or proportion observed by a horse in all his motions when he is thoroughly managed.

CADET. One who is trained up for the army by a course of military discipline. Every son of a family, below the eldest.

CADI. A magistrate, or sort of justice of the peace, among the Arabs and Turks.

CADMIA. A sort of mineral among the ancients, now called cobalt.

CADUCEUS. A name for Mercury's rod or sceptre, which on medals is an emblem of

peace. It was carried by the Roman heralds when they went to proclaim peace.

CÆSAR. The name of a Roman family, of whom Caius Julius, born 100 B. C. distinguished himself as a conqueror, who, having overthrown Pompey, and the constitutional authorities of the republic, was assassinated, March 15, 44 B. C. He was succeeded as Emperor by his nephew, Augustus, and by an irregular succession for 500 years. The name of Cæsar is still retained by the Emperor of Austria, and by the Emperor of Russia, as Czar.

CAIRNS. Heaps of stones in a conical form, which are frequently to be met with in Scotland and Wales.

CAISSON. A wooden chest filled with bombs or powder, and buried under some work to blow it up; also, the frame used in laying the foundations of a bridge.

CALAMANCO. A kind of woollen stuff manufactured in England and Brabant. It has a fine gloss, and is chequered in the warp.

CALAMARIÆ. The third natural order of plants in the Linnæan system, containing the reeds resembling grasses.

CALAMINARIS, or LAPIS CALAMINARIS. The calamine stone, or oxide of zinc among the chymists; a kind of bituminous, fossile earth, which, when mixed with copper, produces brass.

CALCAREOUS EARTH, or LIME, as marble, limestone, marle, and gypsum, forming ranges of mountains, and containing marine shells and bones of animals, of which it is supposed to be the concentrated ruins.

CALCINATION. The solution of a mixed body by the means of heat or any corroding substance, as mercury, aquafortis, &c. whereby it is reduced to powder. The body so reduced was named a calx, in common language a cinder, and in chymistry an oxide.

CALCULATION. The act of computing several sums by means of addition, subtraction, multiplication, division, &c.

CALCULUS, or STONE. A name generally given to all hard concretions, not bony, which are formed in the bodies of animals.

CALCULUS, DIFFERENTIAL. A method of finding a small quantity, which, taken an infinity of times, is equal to a given quantity, or it is the arithmetic of infinitely small quantities, and similar to fluxions, which considers momenta as quantities. Differentials are distinguished by the letter d, as $d\,x$, differential of x; and fluxions by a dot over it, as $\dot{x}$ is the fluxion of x. The differential calculus is now generally referred to the method of fluxions.

CALENDAR. A distribution of time into months, weeks, and days, throughout the year, together with an account of the festivals and such other matters as serve for the daily purposes of life. Calendars vary according to the different forms of the year and the divisions of time in different countries, as the Roman and Julian Calendars used by the Romans, the Gregorian and Reformed Calendars among the moderns.

CALENDAR MONTH. The name given to the months as they stand in the almanac.

CALIBER. The thickness or diameter of any thing, particularly of the bore of a cannon.

CALIBER COMPASSES. A particular instrument used by gunners for measuring the diameters of shot, shells, &c. They resemble other compasses, except in their legs, which are arched, in order that the points may touch the extremities of the arch.

CALICO. A cloth made from cotton wool, resembling linens; the name is from Calicut, a city in India, from whence the Spaniards or Portuguese first brought calicoes.

CALICO-PRINTING. The art of applying coloured patterns on a white or coloured ground of linen or cotton. It has been practised in India for more than two thousand years, but has not been cultivated in Europe more than a century, and but a few years in the United States. This art depends on the action of certain bodies, which, by chymical agency, permanently unite the colouring matter of dyeing materials to particular parts of the cloth. The substances which bind the colouring matter to the faces of the cloth are denominated mordants. The mordant is applied to the cloth by wooden blocks, in which the patterns are carved in relief. This effect is also produced by means of a small brush, by sheet copper fixed in a block, like filagree work, or by the copper-plate. When the mordant has been applied, the cloth is made completely dry, and washed in water, till the thickening matter, and those parts of the mordants uncombined with the cloth, are removed. After this the cloth is rinsed in clean water. It is then dipped in the dye liquor, by which the whole is dyed. The parts which have been impregnated in the mordants receive a brighter colour than those which have not. The colour of the

former is permanent, but that of the latter is discharged by repeated washing.

CALIPH, in the Arabic KHALIFA, which signifies successor. A title assumed by the successors of Mahomet, who reigned in Bagdad.

CALKERS. Persons employed in calking vessels; that is, driving oakum and other things into the seams of vessels to keep out the water.

CALL. An artificial pipe made to catch quails; also, a sea term for a whistle or pipe used in calling the sailors to their duty.

CALOMEL. Mercury well pounded with sulphur; it is also called a muriate of mercury.

CALORIC. The name given in chymistry to that agent which produces the phenomena of heat and combustion. It is hypothetically regarded as a subtile fluid, the particles of which repel one another, and are attracted by all other substances. It is ponderable, and, by its distribution in various proportions, among the particles of matter, gives rise to three general forms of gas, liquids, and solids. The particles of water, by losing caloric, have their cohesion so much increased, that they assume the solid form of ice; by adding caloric they again become fluid; and by a still further addition, they are converted into vapour. Caloric exists in different states—free or uncombined, and in a state of combination. In the former condition, it creates the sensation of heat, and produces expansion in other bodies. The power which it has of exciting the sensation of heat, and occasioning expansion, is understood by the expression of its temperature. This is supposed to vary with the given quantity of free caloric in a given quantity of matter; a high temperature being ascribed to the presence of a large quantity of free caloric, and a low temperature to that of a small quantity. We are ignorant, however, of the extremities of temperature, and may compare it to a chain, of which a few of the middle links only are exposed to our observation, while its extremities are concealed from our view. With regard to combined caloric, it has been shown, that solids, during liquefaction, imbibe a quantity of caloric, which ceases to be obvious both to our senses and the thermometer. The same is also true of solids and liquids in their conversion into vapours and gases; a portion of caloric, which is essential to the elasticity of the product, ceases to become apparent. Whenever this effect takes place, cold is said to be produced; by which we are only to understand the passage of caloric from a free to a latent form. The sources of caloric are six, viz. the sun's rays, combustion, percussion, friction, the mixture of different substances, and electricity.

CALORIMETER. An instrument to measure the capacity of a body for caloric, or its specific caloric. The thermometer measures merely the variations of temperature, or sensible heat. The body in the calorimeter is placed in the innermost of three concentric vessels, the two outer ones containing ice; the quantity of water produced by the cooling of the body at a given number of degrees, determines its specific caloric.

CALVARY. The name of a cross in Heraldry, as it is borne in coats of arms. It is so called because it resembles the cross on which our Saviour suffered.

CALUMET. An Indian pipe, which was otherwise called the Pipe of Peace, because it served the bearer as a pass or safe conduct among the neighbouring tribes of Indians. It was very similar to the caduceus, or Mercury's wand, of the ancients.

CALX. A fine powder remaining after the calcination of metals and other mineral substances; also, another name for lime.

CALYCANTHEMA. The 17th practical Linnæan order of plants, the corolla and stamina inserted in the calyx.

CALYCIFLORÆ. The sixteenth natural order of plants in the Linnæan system, comprehending those plants which have only a calyx, in which the stamina are inserted.

CALYPTRA. The tender skin in mosses that loosely covers the top of the theca, like a cup.

CALYX. A general name for the cup of a flower, or that part of a plant which surrounds and supports the other parts of a flower.

CAMBERED. A sea term applied to a deck, the flooring of which is highest in the middle.

CAMBRIC. A sort of very fine white linen, made of flax.

CAMEL. A quadruped called Arabian, or Dromedary, when he has a single bunch, and Bactrian, when two bunches, on his back. They are common over the greater part of Af-

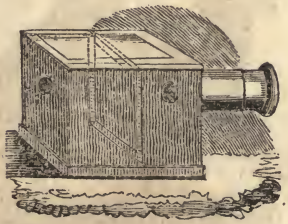
rica and Asia Minor, and are exceedingly useful as beasts of burden in traversing the sandy deserts and mountainous districts of those countries, being very sure footed, and capable of carrying from 1200 to 1500 lbs. weight, and enduring great abstinence both of food and water; part of their hair is also very valuable.

CAMELEOPARD, or GIRAFFE. A native of South Africa, usually 16 or 17 feet high, and named from its resemblance to a camel and a panther. These animals are exceedingly docile, and delicate in constitution. In 1827, the Bey of Tunis sent two as presents to the kings of France and of England. The one in France is kept at the *Jardin des Plantes* at Paris, and attended with great care; the one to England was sent to Windsor, where the climate seemed unfavourable for it.

CAMEO. A sort of onyx stone, having various figures upon it; in Natural History, a sort of pellucid gem.

CAMERA LUCIDA. An optical instrument invented by Dr. Hook, for the purpose of making the image of any object appear on the wall in a light room, either by day or night. This name has since been applied to an instrument invented by Dr. Wollaston, for drawing objects in true perspective.

CAMERA OBSCURA. An optical machine or apparatus, representing an artificial eye, by which the images of external objects, received through a double convex glass, are shown distinctly, and in their native colours.



CAMLET. A sort of stuff originally made of camel's hair and silk mixed, but now of wool and silk.

CAMP. The spot of ground where an army rests and intrenches itself.

CAMPAIGN. The space of time during which an army is kept in the field.

CAMPANACEÆ. One of Linnæus's natural order of flowers, including those that are bellshaped, as the campanula, convolvulus, &c.

CAMPANULA, or BELL FLOWER. A sort of plants, mostly perennials, and bearing a bell-shaped flower.

CAMPHOR. A white concrete crystalline substance, of an acrid bitter taste, and a penetrating smell. It was formerly supposed to be a resin which was procured from a tree, much like a walnut tree, growing in Borneo, and thence called the camphor tree; but modern chymists consider it to be a peculiar substance not to be classed either with the oils or the resins. It is procured from the volatile oil of several plants, as rosemary, sage, lavender, &c.

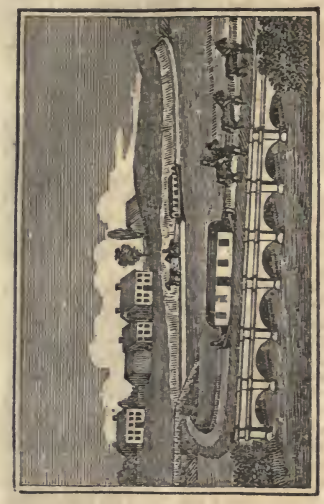
CAN. A drinking vessel; particularly that used by sailors.

CANADA BALSAM. A transparent resinous juice, of an agreeable smell, and a warm pungent taste. It is imported from Canada, in North America.

CANADIAN LYNX. An animal twice the size of a cat, of a bright bay colour, with dusky spots.

CANAL. An artificial river, provided with locks and sluices, and sustained by banks and mounds, to afford an easy, speedy, and cheap conveyance of goods, &c. in boats and vessels, from one part of a country to another. Egypt has been celebrated for its canals from the earliest periods of authentic history. The Chinese have a more extensive inland navigation, than any other nation, if not greater than that of all other nations. All the European nations have opened numerous and extended canals since the 17th century. Great Britain has great investments in canal stock. Though the United States had done little for inland navigation 15 years ago, they have done wonders since. The Erie or Western Canal, 365 miles in length, connecting the Hudson river, at Albany, with lake Erie, is one of the noblest works of art; it was commenced on the 4th of July, 1817, and completed Oct. 26, 1825, and cost about seven millions of dollars. The Chesapeake and Delaware canal, and others, completed or commenced, amount to about 2500 miles in all, and strongly attest the enter-

prise of this nation. The engraving represents a section of the western canal and the aqueduct at Rochester.



CANARY-BIRD. An elegant yellow bird much bred in England and the United States; brought, originally, from the Canary Islands, where it is of a white colour.

CANCER, the CRAB (in Astronomy.) A constellation, and the fourth sign in the zodiac, marked thus ♋, which the sun enters on the twenty-first of June, thence called the summer solstice.

CANCER, TROPIC OF. A small circle of the sphere, parallel to the equator, and passing through the beginning of Cancer.

CANCER (in Medicine.) A hard ulcerous and exceedingly painful swelling, and generally seated in the glandulous part of the body.

CANDLE. A long roll or cylinder made of tallow, wax, or spermaceti, in which is inserted a wick of cotton or rush, for the purpose of burning.

CANDLEMAS DAY. The festival observed on the second of February, in commemoration of the purification of the Virgin Mary.

CANDY. A preparation of sugar made by melting and crystallizing it several times.

CANDYTUFT. An annual that is cultivated in gardens, bearing a white or purple flower.

CANE. A kind of strong Indian reed, used for walking sticks; also the plant which yields the sugar, and grows freely in the East and West Indies. The skin of the sugar cane is soft, and the spongy matter or pith it contains, very juicy.

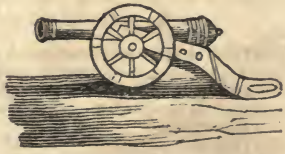
CANE (in Commerce.) A long measure of different dimensions in different countries, from two to five yards.

CANIS (in Astronomy.) The name of two constellations in the southern hemisphere; namely, Canis Major and Canis Minor.

CANKER. A cancerous affection which occurs frequently in fruit trees; also a fungous excrescence in the feet of horses.

CANNIBAL. A man eater.

CANNON. A piece of ordnance, or a great gun for a battery, which is mounted on a carriage: the principal parts of a cannon are the muzzle, or mouth, the entrance of the bore or the hollow part which receives the charge; the chase, or the whole space from the muzzle to the trunnions; the trunnions, or two solid cylindrical pieces of metal, which project from the piece, and by which it is supported on the carriage; the vent, which in small fire-arms is called the touchhole, a small hole pierced at the end of the bore or chamber, for the purpose of priming the piece with powder, or to introduce the tube, in order, when lighted, to set fire to the charge; the chamber, that part of the bore or hollow of the piece where the powder is lodged which forms the charge; the breech, the solid piece behind, the hindermost part of which is called the cascabel. That part next to the breech is called the reinforce, which is made stronger to resist the force of the powder. The ornaments of a cannon are the muzzle astragal and fillets, the chase astragal and fillets, the reinforce ring, and the breech mouldings. According to the sized ball which they will explode, they are called 6, 12, or 48 pounders. The first cannon was used in 1304, on the coast of Denmark.



CANOE. A light boat formed of the trunk or bark of a tree; used mostly by the Indians.

CANON. A law or ordnance of the church. The Canon Law consists of rules drawn from Scripture, from the writings of the ancient fathers, from the ordinances of councils, and the decrees of the pope.

CANON. A dignity in a cathedral church.

CANON OF SCRIPTURE. That body of books of the Holy Scripture which serves for a rule of faith and practice.

CANONIZATION. The act of enrolling any one among the number of the saints, which is the practice of the Romish church, and performed by the pope.

CANOPIS (in Astronomy.) A bright star of the first magnitude, in the rudder of the ship Argo.

CANTATA. A piece of music for one, two, or more voices, chiefly intended for a single voice with a thorough bass.

CANTEEN. A suttling house for both officers and men; also a small vessel of tin plate or wood, in which soldiers on their march carry their liquor.

CANTERBURY-BELL. A fine flower much cultivated in gardens. The plant is biennial, and the flower is white or blue, and of an oblong figure.

CANTHARIDES, or SPANISH FLIES. This fly is nine or ten lines in length, of a shining green colour, mixed with azure, and has a nauseous smell. It feeds upon the leaves of trees and shrubs, preferring the ash. These flies, when bruised, are universally used as a vesicatory, or blistering plaster. The largest come from Italy, but the best from Spain.

CANTON. A division or small parcel of a country, such as the cantons of Switzerland.

CANTON (in Heraldry.) An ordinary, so called because it occupies but a cantel or corner of the escutcheon.

CANVAS, or CANVASS. The cloth on which painters usually draw their pictures; and also that of which the sails of vessels are made; also, the examination of the votes given at an election.

CAP. In general, any covering for the head; sometimes of a particular make, as a cardinal's cap.

CAP. The name of several things similar in figure or use, as the cap of a great gun, a piece of lead laid over the touchhole; the cap in a ship, the square piece of timber placed over the head of a mast.

CAP (in Architecture.) The uppermost part of any member, as the capital of a column, the cornice of a door, &c.

CAP OF MAINTENANCE (in Heraldry.) One of the regalia or ornaments of state, carried before the king of Great Britain at the coronation and other great solemnities.

CAPE (in Geography.) A promontory or headland projecting into the sea farther than the rest of the coast, as the Cape of Good Hope, Cape St. Vincent, &c.

CAPELLA. A star of the first magnitude in Auriga.

CAPER-BUSH. A shrub or tree, the bud or flower of which is converted into a pickle called caper.

CAPILLAIRE. This pleasant syrup is much used in the West Indies, when mixed with water, to allay thirst, and ought to be generally introduced into this country during warm weather, instead of brandy, or spirits and water.

To make the syrup, put 1 oz. of the leaves of capillaire, (adiantum pedatum, or maiden-hair) into a pint of boiling water; pour the water off in a minute or two, and after gently stewing them, at least twelve hours, rub them through a sieve, and mix them with sugar, prepared in the following manner: Put a pound of sugar into half a pint of water, boil and skim it well, let it boil till upon dipping a silver spoon first into water, and then into the sugar, and into cold water again, the sugar which remains on the spoon may be broken off clear; add to this the water which the leaves were put into, and put it in an earthen pan over hot coals, covered up close—care must be taken to have the heat always equal for three days, and not too great, or it will burn. Take some of this syrup between your fingers, and in drawing them apart, if a thread be formed which cannot be easily broken, it has been sufficiently done; then add the capillaire as before directed, and put it into bottles, which must not be corked till quite cold.

CAPILLARY. An epithet for what is as fine as a hair. Capillary tubes are pipes of the fineness of a hair, by which various phenomena in physics and hydrostatics are displayed. Capillary vessels, in Anatomy, the smallest and extreme parts of the minutest ramifications of the veins and arteries. One of the most singular phenomena of these tubes is, that if you take several of them of different sizes, open at both ends, and immerse them a little way into water, or any other fluid, it will immediately rise in the tubes to a considerable height above the surface of that into which they are immersed; these heights varying in nearly a reciprocal proportion of the diameters; the greatest, according to Dr. Hook, being about 21 inches.

CAPITAL. The chief or head of a thing.

CAPITAL (in Geography.) The seat of government.

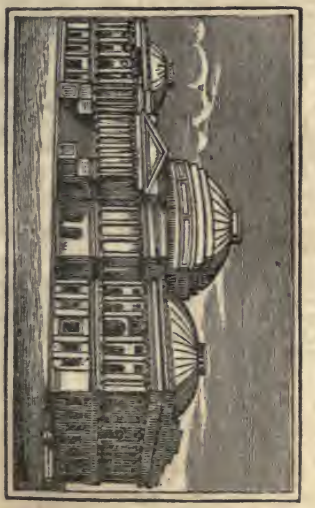
CAPITAL (in Architecture.) The uppermost part of a column, serving as the head.

CAPITAL (in Printing.) The large letters, which serve as initials, or in titles.

CAPITAL (in Commerce.) The stock or fund of a trading company.

CAPITOL. A famous fort or castle on the Mons Capitolinus at Rome, wherein was a temple dedicated to Jupiter.

CAPITOL. The building in which the legislature of a state or nation assemble for public business. The engraving represents the Capitol of the United States, erected for the accommodation of Congress. It is built of white free-stone, and is the most magnificent edifice in the United States. The principal building is 340 feet by 120, with two projections, one 170 feet by 65, the other, 170 feet by 83. It is surrounded by an elegant iron paling, which encloses 20 acres of ground, planted with various kinds of trees and shrubs. It cost $3,000,000.



CAPITULATION. A treaty between the besieged and the besiegers of any place, whereby the former surrender it and themselves on certain conditions.

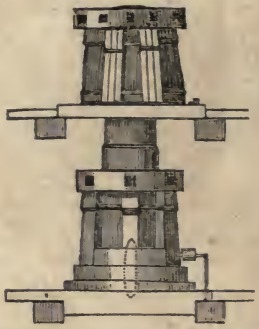
CAPIVI. A tree of Brazil, the flower of which resembles a rose. It grows to the height of sixty feet.

CAPRICORN. A southern constellation, and one of the twelve signs of the zodiac, which the sun enters on the 21st of December. It is marked thus, ♑.

CAPRICORN, Tropic of. A small circle of the sphere, parallel to the equinoctial, passing through the beginning of Capricorn or the winter solstice, which is the sun's greatest southern declination, namely, 23 degrees and a half.

CAPSICUM. A plant, native of South America, the fruit of which is a pod, and the strongest kind of pepper, known by the name of Cayenne Pepper.

CAPSTAN. A large piece of timber resembling a windlass, placed behind the mainmast. It is a cylinder with levers, used to weigh anchors, to hoist up or strike down topmasts, &c.



CAPTAIN. A commander of a company of foot or a troop of horse; and in the naval or merchant service, the commander of a vessel: also, in grammar schools, the head boy of his class.

CAPTION (in Law.) The act of taking any person by any judicial process.

CAPUCHIN. An order of Franciscan monks in the Romish church, so called from their capuch or hood sewed to their habits.

CAPUT MORTUUM. The inert residuum of any body, remaining after all the volatile and humid parts have been extracted.

CAR. A small carriage of burden, drawn by one or two horses.

CARABINE, or CARBINE. A sort of short gun, between a musket and a pistol, having its barrel two feet and a half long.

CARACT, or CARAT. The weight of 24 grains; or one scruple 24 carats make one ounce. This is the standard weight by which the fineness of gold is distinguished. If the gold be so fine that, in purifying, it loses nothing, or but very little, it is said to be gold of 24 carats; if it lose one carat, it is said to be gold of 23 carats.

CARAT (in the weighing of Diamonds, &c.) A weight of four grains.

CARAVAN. A company of merchants or pilgrims in the East, who go in an organized body through the deserts, and travel on camels.

Their number often amounts to some thousands. They generally travel well armed, to defend themselves from the attacks of the wandering Arabs, and other robbers.

CARAVANSERA. A large building in the East, or an inn for the reception of travellers and the caravans. The building commonly forms a square, in the middle of which is a spacious court, and under the arches or piazzas that surround it, there runs a bank, raised some feet above the ground, where the merchants and travellers take up their lodgings, the beasts of burden being tied to the foot of the bank.

CARBON. A simple substance, whose most common form is purified charcoal, but which combines with oxygen, forming carbonic acid gas; with hydrogen, forming carburetted hydrogen gas, used in gas lights; and with nitrogen gas, forming prussic gas. Charcoal is useful as an antiseptic, and indestructible by age or fire. It is an ingredient of gunpowder, and forms a large proportion of the substance of coals, besides being the basis of vegetables, and, in connexion with hydrogen, forming all combustible substances. Itself not gas, it seems to serve as a general fixer of gases.

CARBONATES. Salts formed by the combination of carbonic acid with different bases, as carbonate of copper, &c.

CARAWAY. An indigenous biennial plant, propagated from seeds, which ought to be sown in autumn; it blows in the second year, and decays a short time after the seeds are ripe. This plant furnishes a wholesome and agreeable food to goats, swine, and sheep.

CARBONIC ACID. A compound of carbon and oxygen in its gaseous state, called fixed air, or carbonic acid gas; and being one and a half times heavier than atmospheric air, it will neither support animal life nor combustion. It is the gas which escapes from fermenting masses, carrying with it the viscid substance called yeast to the top.

CARBUNCLE. A precious stone, of the colour of a burning coal.

CARBURET. A substance formed by the combination of carbon with metals.

CARBURETTED HYDROGEN. Gas formed of hydrogen and carbon, which, on being ignited, fixes oxygen, and radiates light and heat, as in gas lights, and all other lights.

CARCASS (in Building.) The shell or timber work of a house before it is lathed and plastered, or the floors laid; in Gunnery, an iron case, filled with combustible materials, and discharged from a mortar after the manner of a bomb.

CARD. An instrument like a comb, which is used in combing or disentangling wool.

CARD OF A COMPASS. The circular paper on which the points of a compass are marked.

CARDINAL. A dignitary in the Romish Church, and one of its chief governors, of which there are seventy in number. They constitute a college, by and from whom the pope is chosen.

CARDINAL POINTS. North, south, east, and west; subdivided into intermediate parts, as N. E. north east; N. W. north west, &c. to the number of thirty-two points of the compass, each eleven and a half degrees.

CARDINAL'S CAP, or CARDINAL FLOWER. A plant so called because its flower, by the intense redness of its colour seems to emulate the scarlet cap of a cardi n.'

CARDINAL'S CAP, or HAT. A red cap or hat, of a peculiar form, which is worn by cardinals.

CARDINAL VIRTUES. The four virtunes of prudence, temperance, justice, and benevolence.

CARDOON. A species of artichoke which grows wild in the south of France, and has smaller flowers than the common artichoke, and the scales of the calyx terminated by long sharp spines. The stems rise to the height of four or five feet, and are upright, thick, and cottony. The leaves are large and winged, and the flowers of a blue colour.

CARDS. Pieces of pasteboard of an oblong figure, and different sizes, made into packs of 52 in number, and used by way of amusement in different games. They are painted with various figures, namely, hearts, spades, diamonds, clubs, and kings and queens. They are said to have been introduced in the fourteenth century, to divert Charles VI. king of France, who had fallen into a state of melancholy. By the hearts, cœurs, were meant the gens de chœur, choirmen or ecclesiastics, instead of which the Spaniards use chalices. The spades, in Spanish espades, swords, were intended to represent the nobility, who wore swords or pikes. The diamonds, or carreaux, designated the order of citizens or merchants. The trefle, trefoil leaf or clover grass, was an emblem of the husbandman; this is called clubs with us, because the Spaniards have bastos, clubs, on their cards. The knaves represent the servants of the knights. The four kings were intended for David, Alexander, Cæsar, and Charlemagne, who established the four great monarchies of the Jews, Greeks, Romans, and Franks. The four queens were supposed to represent Argine, i. e. regina, the queen by descent, Esther, Judith, and Pallas. The moulds or blocks used for making cards were exactly like those which were shortly afterwards used in the making of books.

CAREENING. The operation of heaving a ship down on one side, by the application of a strong purchase to her masts, which are properly supported for the occasion, to prevent their breaking with so great a strain; by which means one side of the bottom being elevated above the surface of the water, may be cleansed or repaired. When a ship is laid on a careen, every thing is taken out of her; but this operation is now nearly superseded by the introduction of dry and screw docks, which are described under their proper heads

CARGO (in Commerce.) The merchandise and effects that are laden on board a ship.

CARICATURE (From the Italian Caricatura.) A distorted way of representing objects, so as to make them appear ridiculous.

CARIES. A disease of the bones; a kind of rottenness.

CARINA. A keel; the name given by Linnæus to the lower concave petal of a papilionaceous or butterfly-shaped flower, as the pea, which resembles the keel of a ship in its shape.

CARLINE THISTLE. A plant of the thistle kind, which is sometimes used medicinally.

CARLINGS. Short pieces of timber which serve to support and strengthen the larger beams in a ship.

CARMAN. One who is employed in carrying goods from the wharfs to the merchant's warehouses.

CARMELITES. An order of monks who were first founded on Mount Carmel.

CARMINATIVES. Medicines which promote perspiration.

CARMINE. A dross or powder of a deep red colour, procured from cochineal, and used for painting in miniature.

CARNATION. A beautiful sort of clove pink, having its bright colours equally marked all over the flowers.

CARNATION (in Painting.) The flesh colour.

CARNIVAL, or CARNAVAL. A season of mirth and festivity, particularly observed by the Italians, from Twelfth Day until Lent.

CARNIVOROUS. An epithet applied to animals that feed on flesh.

CAROTIDS. Two arteries in the neck, which convey the blood from the aorta to the brain.

CARP. A fresh-water fish fitted for stocking ponds, as it spawns three times a year.

CARPENTER'S RULE. A tool generally used in taking dimensions, and casting up the contents of timber and the artificer's work.

CARPENTRY. The art of cutting, framing, and joining large pieces of wood, for the uses of building: it is subservient to architecture, and is divided into House Carpentry and Ship Carpentry. Carpentry differs from joining only inasmuch as the work is coarser, larger, and not so curious.

CARPET. A sort of stuff wrought either with the needle or the loom, and used as a covering for the floor. Persian and Turkish carpets are most in esteem.

CARRIAGE. In general, a vehicle for carrying goods and persons; in Gunnery, the machine upon which the gun is mounted; in Carpentry, the frame of timber-work which supports the steps of wooden stairs.

CARRIERS. All persons carrying goods for hire; also, a sort of pigeons that are used in conveying letters to a distance.

CARROT. A fleshy root, cultivated as a garden vegetable.

CART. A common vehicle on two wheels, used for transporting goods.

CARTE BLANCHE. A blank paper, delivered to a person to be filled up as he pleases; applied generally in the sense of unlimited terms granted to a person.

CARTEL. An agreement between two states at war for the exchange of prisoners.

CARTILAGE. A part of the animal body, harder and drier than a ligament, and softer than a bone; its use is to render the articulation of the bones more easy.

CARTILAGINOUS FISHES. Those having cartilaginous instead of bony skeletons.

CARTOON. A design made on strong paper, to be afterwards calked through, and transferred to the fresh plaster of a wall to be painted in fresco, such as the famous cartoons of Raphael.

CARTOUCH. A case of wood holding about four hundred musket balls, besides iron balls, from six to ten, to be fired out of a howitzer.

CARTOUCHES. Blocks or modillions used in the cornices of wainscoted apartments; also, ornaments representing a scroll of paper.

CARTRIDGE. A case of paper or parchment filled with gunpowder, and used in the charging of guns.

CARVEL. A small ship or fly-boat.

CARVING. The art of cutting wood into various forms and figures.

CARYATIDES. A sort of columns or pillars shaped like the bodies of women, and in the dress of the Carian people. They were intended to represent the Carian women who were taken captives by the Athenians.

CARYOPHYLLÆ. A natural order of plants consisting of such as have pinklike flowers.

CASE. Any outside covering which serves to enclose a thing entirely, as packing cases or knife cases; in Carpentry, the case of a door is the wooden frame, in which it is hung; in Printing, it is a frame of wood, with numerous small partitions for the letters.

CASE (in Grammar.) An accident of nouns which have different inflexions or terminations.

CASE-HARDENING. A method of preparing iron, so as to render its outer surface hard, and capable of resisting any edged tool.

CASEMENT. A window that opens on hinges.

CASE-SHOT. Musket balls, stones, old iron, &c. put into cases and shot out of great guns.

CASH. Ready money, distinguished from bills.

CASHEW-NUT. The fruit of the cashew, that abounds in Jamaica and Barbadoes. From this nut is expressed a juice that is made into a pleasant wine.

CASHIER. The keeper of the cash or money, which it is his business to receive and pay.

CASHIERS OF THE BANK. Officers of the bank who sign the notes that are issued out, and examine and mark them when they are returned.

CASHIERING. A dishonourable dismissal of an officer or soldier from the service of a government.

CASHMERE. A light kind of cloth, made of the very fine wool procured from a sort of goat that abounds in Cashmere, a country of Thibet.

CASSAVI. An American tree, bearing a bell-shaped flower. Its roots, when dried and ground to flour, was converted into bread by the original inhabitants.

CASSIA FISTULA, or PUDDING PIPE TREE. A very large tree, a native of Alexandria and the West Indies, which bears a long cylindrical taper or flat pod, divided into many cells, in each of which is a hard seed lodged in a clammy black substance, which is purgative, and is known in medicine by the name of the Purging Cassia, or simply, Cassia.

CASSINE. (SOUTH SEA TREE.) This tree is a native of the Southern States, rises to the height of ten or twelve feet, sending out branches from the ground upwards, which form themselves into a sort of pyramid. The flowers are produced in close whorls at the joints of the branches near the footstalks of the leaves; they are white, and are succeeded by red berries, which continue upon the plant most part of the winter, and being of a bright red colour, make a fine appearance intermixed with green leaves.

CASSIOPEIA. A northern constellation.

CASSIQUE, or CACIQUE. A sovereign lord among the ancient Americans.

CASSOCK. A vestment worn by clergymen under their gowns.

CASSOWARY. A large bird of prey.

CAST. The name of figures or small statues in bronze.

CASTE. The name of different tribes in Hindostan, of which the Brahmins is the most noble.

CASTING (among Sculptors.) The taking of casts or impressions of figures, busts, &c.; in a Foundery, the running of metals into any mould prepared for this purpose.

CAST IRON. The iron as it is extracted from the ores by means of casting.

CASTLE. A fortress or place rendered defensible by nature and art. Castles being an emblem of grandeur, are frequently borne in coats of arms.

CASTOR. A soft, grayish yellow substance, found in the bags of the beaver, near its groin. In a warm air, the castor grows by degrees hard, brittle, and of a dark colour.

CAT. A well known animal nearly allied to the tiger, is either domestic or wild. The wild or mountain cat is borne in coats of arms as an emblem of liberty, vigilance, and forecast.

CAT. A sea term for a ship usually employed in the coal trade; also, a sort of strong tackle for drawing up the anchor; also, a military term for a kind of shed under which soldiers conceal themselves while filling up a ditch or mining a wall.

CATACOMBS. Grottoes or subterraneous places for the burial of the dead, frequently found in Egypt and in Italy.

CATALOGUE. A list of books or any other matters, arranged in order, for purposes of sale or reference.

CATAMARAN. A sort of floating raft originally used in China as a fishing boat.

CATARACT. An opacity of the crystalline lens of the eye, or an opaque pellicle, which covers the pupil, causing blindness. A fall of water, as that of Niagara.

CATCH (in Music.) A short and humourous song; also, a sea term for a swift-sailing vessel.

CATCH-FLY. A plant much cultivated in gardens, having grass-like leaves, and a long stalk terminated by a cluster of crimson flowers.

CATECHISM. A system of instruction, conveyed in questions and answers.

CATECHU. A juice of a very astringent quality, pressed from out of several Indian fruits.

CATECHUMENS. A name formerly given in the Christian church, to such as were prepared to receive the ordinance of baptism.

CATEGORY (in Logic.) A name for the predicates or attributes contained under any genus, of which Aristotle reckons ten, namely, substance, quantity, quality, relation, acting, suffering, time, place, situation, and habit.

CATENARY. A curve or a crooked line formed by a rope when hanging.

CATERER. A provider of victuals and other necessaries.

CATERPILLAR. The larva produced from the egg, which is transformed first into the chrysalis, or nymph, and afterwards into the butterfly.

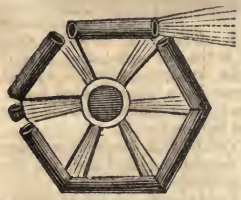
CATGUT. A name for the strings made of the intestines of sheep or lambs, and used in musical instruments, &c.

CATHEADS. Two strong beams of timber in a vessel which serve to suspend the anchor clear of the bow.

CATHEDRAL. The episcopal church, or a church where is a bishop's seat or see.

CATHERINE-WHEEL (in Architecture.) A large circular ornament in Gothic windows.

CATHERINE-WHEEL (in Fire Works.) An arrangement of tubes in the periphery of a circle, the re-action of the burning of which, against the air, occasions the wheel to revolve with a pleasing effect.



CATHOLIC. An epithet properly signifying universal, which the Romish church assumes to itself as its title; whence the name of Roman Catholics has been applied, since the Reformation, to the followers of the Romish doctrine and discipline.

CATHOLIC KING. The title of the king of Spain.

CATHOLIC PRIEST. A clergyman or priest ordained to say mass and administer the sacraments, &c. according to the rites of the Romish Church, and dressed as represented in the engraving.

CATKIN, or AMENT (in Botany.) A long stem thickly covered with scales, under which are the flowers and the essential parts of the fruit, which is so called from its resemblance to a cat's tail. Catkins are to be found on the hazel, willow, &c.

CAT'S EYE (in Mineralogy.) A stone of a glistening gray, with a tinge of green, yellow, or white.

CAT'S-TAIL GRASS. A kind of reed, bearing a spike, like the tail of a cat.

CATTLE. Horned beasts, that feed in pasture, or generally all four-footed beasts, that serve for domestic purposes.

CAVALCADE. A pompous procession of horses and carriages, &c.

CAVALIER. A horseman; a person mounted on a horse, or expert in horsemanship; in Fortification, a work raised within the body of a place, above the other works.

CAVERN. A natural cavity in the earth, arising either from arches accidentally made, or from streams of water flowing under ground. The most remarkable is that in Kentucky, called the Mammoth Cave. Among caverns of celebrity, that of Antiparos, that of Crete, and those of the Peak in Derbyshire, may be named.

CAVETTO (in Architecture.) A concave moulding, the curvature of whose section does not exceed the quadrant of a circle.

CAVIAR. A species of food chiefly imported from Russia: it is made of the hard roes of the sturgeon, formed into small cakes, about an inch thick, and three or four inches in breadth; but sometimes the whole is loosely packed up in small kegs. It is prepared by taking all the nerves or strings out of the spawn, washing it in white wine vinegar, or spreading it on a table, then salting and pressing it in a fine bag; after which it is put into a vessel perforated at the bottom, to allow the moisture to run out, if any should remain. As the sturgeon abounds in the rivers of the United States, caviar might be easily made in immense quantities.

CAUL. A membrane in the abdomen, which serves to cover the intestines.

CAULIFLOWER. The finest sort of cabbage, with a seeded head.

CAUSE. That which produces effects, or something which follows. It may be either a proximate or a remote cause. Much has been said and written of cause and effect in physics, and yet the infant capacities of man on earth are too contracted to grasp much of a subject so deep.

CAUSEWAY, or CAUSEY. A path raised above the level of the ground, and paved with stones or gravel.

CAUSTIC CURVE. A curve formed by the concourse or coincidence of the rays of light reflected or refracted from any other curve.

CAUSTICS. Medicines which, when applied to any part of the body, burn it to a hard crust.

CAUTERY. Any burning application.

CAYENNE PEPPER. A powder prepared from the pods of several species of the capsicum, which originally came from Cayenne, but is now brought from both the Indies. This powerful spice is much esteemed for its flavour, and the quality it is supposed to pos-

ness, of promoting the digestion of fish, and other articles of strong food.

CAYMAN. The American alligator.

CEDAR. A well known evergreen, very like the juniper in appearance, which delights in cold mountainous places. The leaves are much narrower than those of the pine tree, and the seeds are produced in large cones.

CEILING. The inside of the roof or top of an apartment, in distinction from the surface of a floor.

CELERY. A sort of parsley, much used as a winter salad.

CELESTIAL. In theology, relating to the abodes of the blessed. In astronomy, celestial is applied to the visible heavens, particularly the starry firmament.

CELESTIAL GLOBE. An artificial representation of the heavens.

CELL. The apartment or chamber of a monk or nun; also, a small close apartment in a prison.

CELLAR. A place commonly under ground, which serves as a store-room.

CELLS (in Anatomy.) Bags or bladders where fluids are lodged; in Botany, the partitions in the husks or pods of plants, where the seeds are lodged.

CELLULAR MEMBRANE. One of the largest membranes in the human body, of a vascular texture, fitted for holding the fat.

CEMENT. A plastic substance, which, when dry or cold, so coheres as to join surfaces of other bodies together.

CEMETERY. A repository for the dead.

CENSOR. A magistrate among the Romans, who valued and taxed men's estates, and also punished any acts of immorality.

CENSORS. In modern times, persons of learning, appointed to examine all books before they go to press, and to see that they contain nothing contrary to good morals.

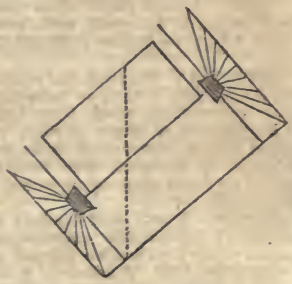
CENT. An abbreviation, in commerce, for centum, a hundred, as five per cent.; that is, five pounds interest, discount, or profit, upon every hundred; also, a coin of the United States.

CENTAURUS. One of the forty-eight old constellations in the southern hemisphere.

CENTRE. The middle point of any thing, especially of a circle or sphere.

CENTRE-BIT. A carpenter's tool, which makes a cylindrical excavation by turning on an axis or centre.

CENTRE OF GRAVITY. A point in a body from which, if that body could be suspended, the whole body would remain at rest, (with respect to its tendency to the earth,) in whatever respective position the surrounding parts may be turned. Thus, the centre of gravity of a globe is its common centre, and that of a balanced beam is the pivot on which it turns. Hence, as in the engraving, when the centre of the mass is within the perpendicular of the wheels, it does not yield; but if so inclined as that the perpendicular from the centre falls beyond the wheels, then the centre falls, and the carriage is overset. In cases of danger, therefore, as in a boat or carriage, the object should be to lower the centre of the mass by lying down.



CENTRIFUGAL FORCE. That by which the parts of a body moving round a centre, endeavour to recede from the centre. Thus, if a stone be tied to one end of a string, and swung round in a circle, while the other end of the string is held by the hand, as the centre of motion, the stone will be felt pulling the hand, as if endeavouring to escape; and, in fact, if allowed, would fly off in a tangent to the circle in which it moves. It is thus that a stone is projected from a sling.

CENTRIPETAL FORCE. That force by which a body is perpetually urged onward to a centre, and thereby made to revolve in a curve instead of a right line.

CENTURION. A military officer among the Romans, who had the command of a hundred men.

CENTURY. A period of 100 years commencing with the year 1, and ending with the

decimal completion, Dec. 31, 1900, being the last day of the present, or 19th century, since the birth of Christ.

CERATE. Wax combined with oil.

CEREBELLUM. The part of the brain in the back of the skull, divided into two lobes.

CEREBRUM. The large part of the brain which occupies the front and top of the skull, divided into three lobes, and of two colours.

CERECLOTH. Cloth smeared over with glutinous matter.

CERES (in Heathen Mythology.) The daughter of Saturn and Vesta, and goddess of corn and fruits. She first taught men the art of cultivating the ground.

CERES. A small planet which revolves round the sun in four years, seven months, and ten days, at the distance of 260,000,000 of miles.

CERTAINTY. The intellectual conviction that a proposition is true; as mathematical, when demonstrated; moral, when founded on the testimony of others; physical, when derived from the senses, or the regular course of nature; or theological, when founded on faith in the divine testimony respecting religious doctrine.

CERIUM. A new metal obtained from Sweden, of a flesh-red colour, semitransparent, becomes friable from heat, but does not melt.

CERTIFICATE. A testimony given in writing to declare or certify the truth of any thing.

CERUMEN. The viscid yellow liquid which flows from the ear, and hardens on exposure to the air.

CERUS, or WHITE LEAD. A sort of calx of lead, made by exposing plates of that metal to the vapour of vinegar.

CETACEOUS. A class of fishes, whose structure resembles that of quadrupeds; but to retain their heat in the water, they are surrounded by a thick coat of fat or blubber. They suckle their young like land animals.

CETERIS PARIBUS. Other things alike.

CETE. An order of animals in the Linnæan system, including such as have breathing apertures on the head, tail horizontal, and pectoral fins instead of feet; as the dolphin, porpoise, and grampus, &c.

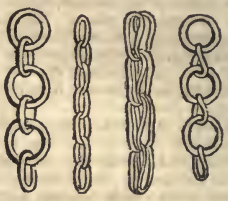
CHAFF. The husks of corn when thrashed and separated from the grain.

CHAFFINCH. A bird so called because it delights in eating chaff. It sings very prettily.

CHAGRIN. Ill humour, vexation.

CHAIN (in Surveying.) An instrument of which there are three different kinds, but that which is most commonly employed for this purpose, is the Gunter Chain, so called from the name of the inventor. This chain is 4 poles, or 66 feet long, and is divided into 100 square lengths or links, each link being 7,72 inches in length. 1 square chain = 10,000 links = 16 poles; 10 square chains = 100,000 links = 160 poles = 1 acre.

CHAIN. A series of rings or links fitted into one another. Chains are made of various metals, sizes, and forms, suited to different purposes.



CHAIN-BOAT. A sea term for a large boat fitted for getting up mooring chains, anchors, &c.

CHAIN-SHOT. Two balls with a chain between them. They are used at sea for cutting the shrouds and rigging of a ship.

CHALCEDONY. A sort of agate or onyx stone.

CHALDRON. A dry measure, consisting of 36 bushels.

CHALICE. The communion cup used at the sacrament of the eucharist.

CHALK. A kind of white fossil, containing a little siliceous earth, and sometimes a small portion of iron. Black chalk, or drawing slate, is a gray or bluish-black mineral, that is massive; the fracture glimmering and slaty.

CHALLENGE. In general, a summons to fight, whether in a duel or in a pugilistic contest; in Law, an exception against jurors made by the party put on his trial.

CHALYBEATE. An epithet for waters in which iron forms the principal ingredient.

CHAM. The title of the emperor or sovereign of Tartary.

CHAMÆLEON, or CHAMELEON. A quadruped of the lizard tribe, that was originally supposed to live on air, but is now known to live on flies, which it catches with its tongue. Its most remarkable characteristic is, that it assumes the colour of the thing to which it is

applied, but its natural colour in the shade, and at rest, is said to be a bluish gray.

CHAMBER (in Gunnery.) That part of a mortar or great gun, as far as the powder and shot reach when it is loaded.

CHAMBER (in Law.) A court; in Commerce, a room set apart for mercantile business.

CHAMBER OF A MINE. The place where the powder is confined, that is to be used for blowing up the works.

CHAMBERLAIN. An officer who has the care of any particular chamber or place, as the Lord Great Chamberlain of England, a great officer of state, to whom belongs the government of the palace at Westminster; the Chamberlain of London, who receives the rents of the city, and deposites them in the chamber or treasury of London.

CHAMBERS. Rooms or apartments belonging to the inns of court; in Anatomy, two spaces between the crystalline lens and the cornea of the eye, divided off by the iris.

CHAMOIS, or, THE WILD GOAT, which inhabits the Alpine mountains, having horns erect, round, and smooth. See GAZELLE.

CHAMOMILE. An odoriferous plant, which has a very bitter taste, but many medicinal virtues.

CHAMPAGNE. A fine French wine, so called from Champagne, a former province of France.

CHAMPION (in Law.) The combatant who undertook to fight in the trial by battel, formerly in use.

CHANCE-MEDLEY (in Law.) The accidental killing of a man, not without the fault of the killer, but without any evil intent.

CHANCEL. That part of a church between the altar and communion table, and the rails or balustrade by which it is enclosed.

CHANCELLOR. In England, an officer of state, known by the title of the Lord High Chancellor of England, and the chief person next to the sovereign in the administration of justice; the Chancellor of the Exchequer is an officer who has the principal management of the king's revenue. In the United States, a judge of a court of chancery or equity established by statute.

CHANCERY. A court of equity to which appeals may be made from the higher courts of law. Though intended to remedy evils, the expense and delay attending its decisions, in England, detract much from its utility.

CHANCES, DOCTRINE OF. A branch of modern mathematics, which treats of the probabilities of certain events taking place.

CHANNEL. The middle or deepest part of any sea; also a strait or narrow sea between two lands.

CHANTRY. A Roman catholic chapel anciently joined to some cathedral or parish, where mass used to be said daily for the souls of the founders.

CHAOS. A dark and rude mass of matter, out of which the heathen philosophers supposed the world was formed.

CHAPEL. A smaller kind of church, which, being built for the convenience of the parish church, is denominated a chapel of ease.

CHAPERON. A hood or cap, particularly that worn by the knights of the garter.

CHAPLAIN. In Europe, one who officiates as clergyman for prayers and preaching in families of royalty and rank. In the United States, the name is confined almost exclusively to those who officiate in the halls of legislation, or in the army and navy.

CHAPLET. A wreath or garland worn about the head. Chaplets are borne in coats of arms, as trophies or ensigns of military prowess.

CHAPTER (in Law.) A body of the clergy belonging to a cathedral, collegiate, or conventual church; also, the place of their meeting.

CHARACTER. Any mark which serves as a sign to denote some particular object, as the astronomical characters, mathematical characters, &c.

CHARADE. A sort of riddle, the subject of which is a word of one or two syllables.

CHARCOAL. The substance from wood half burnt, which is much used in the manufacture of gunpowder.

CHAREWOMAN, or CHARWOMAN. A woman who goes out by the day to job.

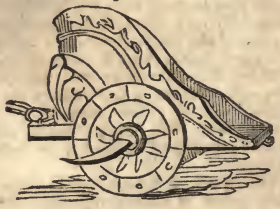
CHARGE (in Law.) The instructions given by the judge to the grand jury; in Ecclesiastical Law, the instructions given by a bishop to the clergy of his diocess.

CHARGE (in Gunnery.) The quantity of powder and ball, or shot, with which a gun is loaded; in Electricity, the accumulation of electric matter on one surface of an electric machine; in Heraldry, whatever is borne on coats of arms; in Painting, an exaggerated representation of a person.

CHARGE OF LEAD. A weight consisting of 36 pigs, each pig containing 6 stone all but 2 lbs.

CHARIOT. An ancient car, in which

armed men used to ride to battle. They were furnished with scythes, hooks, and other offensive weapons.



CHARMS. Incantations or verses used by magicians and sorcerers.

CHARR. A small fish of the salmon kind.

CHARTER (in Law.) A writing or letter patent, whereby privileges are granted.

CHARTS. Draughts or descriptions of coasts; or, in general, projections of some parts of the sea in plans for the use of sailors.

CHARYBDIS. A vortex or gulf at the entrance of the Sicilian straits, which is much celebrated by the ancient writers; but its exact situation is not known in the present day.

CHASSEURS. A select body of light infantry in the French army.

CHASTE-TREE. A tree growing to the height of eight or ten feet, having the leaves fingered like those of hemp.

CHATEAU. Formerly a castle or baronial seat in France, now simply a country seat.

CHATTELS (in Law.) Personal goods.

CHEKY (in Heraldry.) A term for the shield, or any part of it, when it is divided into cheques or squares.

CHEEKS. A general name among mechanics for pieces of timber in any machine, which are two of a kind.

CHEESE. The coagulated part of milk, made with rennet, and constituting a branch of agriculture, called dairy farming, which is very extensive and profitable in England and the United States.

CHEESECAKES. A sort of cakes made of curds, sugar, butter, &c.

CHEESE-VAT. The case in which curds are pressed into the form of a cheese.

CHEF-D'ŒUVRE. A masterpiece or superior performance of any artist.

CHELIDONIUM. There are two species of this genus indigenous in the United States. 1. C. Majus, greater, or Common Celandine. The juice of the plant is extremely acrid. It is a common remedy for warts, and it is said will cure the itch, tetters, and ring-worms. 2. C. Glaucium, Sea Celandine, yellow horned poppy. This plant is very ornamental to sandy shores, but poisonous.

CHEMISTRY. See Chymistry.

CHERRY. The well known fruit of a tree which was introduced into Britain at the time of the invasion of the island by the Romans, and from thence into the United States.

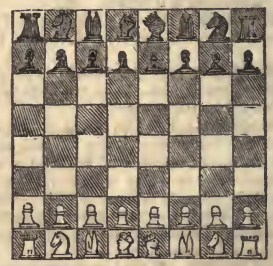
CHERUB. A spirit, which in the celestial hierachy is placed next in order to the Seraphim.

CHERUBIM. The Hebrew plural of Cherub.

CHERVIL. An umbelliferous plant, whose leaves are divided into many segments.

CHESS. An ancient interesting and difficult game, calculated to teach the practice of reasoning with acuteness. It is performed with little round pieces of ivory, on a board divided into sixty-four squares. Each side has eight men, consisting of a king, queen, two knights, two bishops, and two rooks or castles, besides eight pawns or foot soldiers; which are all moved according to certain rules.

CHESS-BOARD. The board on which the game of chess is played.



CHESS-ROOK. Another name for the castles which stand at the outer corners of the chess-board.

CHEST (in Anatomy.) The breast, thorax, or that part of the human body which contains the heart and lungs.

CHESTNUT. A tree bearing a very fine nut of the same name, which is enclosed in a large prickly burr.

CHEVALIER. Literally a knight or horseman, answering to the English cavalier.

CHEVAUX DE FRISE (in Fortification.) A sort of turnpikes or tournequots, consisting of spars of wood set into a piece of timber, and armed with a short spike, so as to point all ways. They serve to stop up breaches.

CHEVRON (in Heraldry.) One of the honourable ordinaries, representing two rafters of a house joined together in chief,

such as carpenters set on the highest part of a house to support the roof.

CHIARO OBSCURO. See CLARO OBSCURO.

CHIEF (in Heraldry.) One of the honourable ordinaries, which occupies the head or upper part of the escutcheon. As the head is the chief part of a man, so is the chief the principal part of the escutcheon, and contains a third part of the field.

CHIGRE. A species of flea, found only in warm countries, particularly in the West Indies, in dry and sandy places. It is not only a troublesome but a dangerous insect, as they get on the feet of the negroes, and others who go bare-footed, and being very small, they bury themselves under the skin, where they lie until they grow big and lay their eggs, producing swellings and sores on the feet, which sometimes mortify and cause death.

CHIMÆRA (in the Heathen Mythology.) A monster feigned to be like a lion in the fore part, a dragon behind, and a goat in the middle.

CHIMES OF A CLOCK. A particular apparatus by which the clock at certain times is enabled to play certain tunes.

CHIMNEY. That part of a house which, by the means of a funnel, serves to carry off the smoke. Various devices have been tried to prevent the smoking of chimneys, as the carrying them up zigzag, or narrower at the top than at the bottom, and the like, which have all been found ineffectual. It is now supposed that chimneys should be built as nearly perpendicular as possible, should be free from all roughness in the inside, and be a little wider at the top than at the base.

CHINESE. A native of the Chinese Empire, which is one of the most populous and extensive empires on the globe; it embraces China, Thibet, Corea, and Chinese Tartary. One of its greatest curiosities is a wall extending 1500 miles over rivers and mountains, from 20 to 30 feet in height, and sufficiently wide for six horsemen to ride side by side. It was built as a defence against the Tartars, and is said to have been completed 214 years before the Christian era. The Chinese are very ingenious, industrious, mild, and intelligent; but in general timid, vain, artful, and jealous of strangers. The capital is Pekin, which is surrounded by a wall 30 feet high, and 14 miles in circumference; it is the most populous city on the globe, containing 3,000,000 souls.

CHINTZ. A fine Indian painted calico.

CHIROMANCY. The pretended art of foretelling a person's fortune by the lines in his hands.

CHIVALRY. The name anciently given to knighthood, a military dignity; also, the martial exploits and qualifications of a knight. Chivalry, as a military dignity, is supposed by some to have taken its rise from the crusades, because these expeditions gave rise to many chivalrous exploits and feats of arms; but it is evident that its origin may be traced much higher, to the northern nations who settled in Europe on the decline of the Roman empire, whose martial habits and temper

led them to make valour and prowess the only sources of honour and distinction.

CHIVES. A sort of small onions.

CHLORINE, or OXYMURIATE ACID GAS. It is by some considered as a compound, and by others, as a simple substance. It combines with carburetted hydrogen, and thereby exhibits the phenomena of combustion; but will not support animal life. As it discharges colours, it is used as a bleaching liquid. Its specific gravity 2.4733.

CHLORITES. A kind of green jasper, almost as pellucid as the coarse emerald.

CHOCOLATE (in Commerce.) A kind of paste, prepared chiefly from the nut of the cocoa, with a mixture of other ingredients.

CHOIR. That part of a cathedral where the service is performed.

CHOKEDAMP (in Mining.) The noxious air occasionally found at the bottom of mines.

CHOKEPEAR. A very rough tasted pear.

CHOLERA MORBUS. A disease consisting of a violent perturbation in the bowels, accompanied with a discharge of bile upwards and downwards.

CHORD (in Geometry.) A right line drawn from one part of an arc of a circle to another.

CHORDS (in Music.) Strings, by the vibration of which the sensation of sound is excited.

CHOROGRAPHY. A part of geography which treats of the description of particular countries.

CHORUS. A company of persons all singing in concert.

CHOULTRY. An East Indian inn.

CHRIST. Which properly signifies anointed, is the name of the ever blessed Redeemer of the world.

CHRISTENDOM. The whole Christian world.

CHRISTENING. The first ceremony of initiation into the Christian church. It is a term particularly applied to the baptism of

infants, in which the parents become answerable for the Christian education of the child.

CHRISTIAN. One who believes in the fundamental doctrines of Christianity, and whose life is habitually governed by its precepts.

CHRISTMAS. A festival observed in the Christian church on the twenty-fifth of December, in commemoration of our Saviour's nativity.

CHROMA. A soft kind of music.

CHROMATICS. That part of optics which explains the several properties of light and colour.

CHRONICAL. An epithet for diseases of long duration.

CHRONOLOGY. The science which teaches the measures and divisions of time. The divisions of time are either natural or artificial; the natural divisions of time are the year, month, week, day, and hour, deduced from the motions of the heavenly bodies, and suited to the purposes of civil life; the artificial divisions of time are the cycle or period, the epoch, and the era or epocha, which have been framed for the purposes of history.

CHRONOLOGY, HISTORY OF. Chronology, as regards the natural divisions of time, was doubtless coeval with the creation, for we learn from the sacred historian that the work of creation was performed within the period of a week, or seven days, whence this division was observed by the Hebrews, and from them transmitted to the Egyptians and other nations. But the Persians are said to have been ignorant of such a division. The Greeks had weeks of ten days, and the Romans weeks of eight days. It is evident from the names of the days of the week among most European nations, that we derive this division from the ancient Celts or Scythians, who, in all probability, at the dispersion of mankind after the deluge, borrowed this patriarchal mode of measuring time. The year is that division of time which was regulated by the motions of the sun, being that period of time in which the sun passes through the signs of the zodiac. This division was doubtless formed at the time that astronomical observations were first made; but the Egyptians are the first people on record who formed this division, which they made to consist of 360 days, and subdivided into 12 months of 30 days each; to these Trismegistus is said to have added five more days. The ancient Jewish year was the same as the Egyptian; but on their departure from Egypt they adopted the lunar year, consisting of 30 days and 29 days alternately, and in order to make it agree with the solar year, they sometimes added 11 or 12 days at the end of the year, and sometimes a whole month after a certain number of years. The Greeks also reckoned by the same kind of year. The ancient Roman year was also lunar, and at first con-

sisted of 10 months of 30 and 31 days; two months were afterwards added by Numa Pompilius, which consisted of 29 and 31 days, making in the whole 355 days. Julius Cæsar first reformed the calendar, and adopted the solar year of 365 days in the common year, with the addition of a day in every fourth year, called Bissextile, or Leap Year; in order to adjust the computation to the true solar year, it was then reckoned 365 days 6 hours, but as the true solar year was found to be 365 days, 5 hours, 48 minutes, 48 seconds, a farther reformation of this calendar has been made, on the assumption that the solar year consists of 365 days, 5 hours, and 49 minutes. According to this computation, which was made by Pope Gregory XIII. in 1582, and thence called the Gregorian style, an intercalation of one day in February should be made every fourth year, and that the sixteen hundredth year of the Christian era, and every fourth century hereafter, should be a bissextile or leap year. One day consequently is to be intercalated in the years 2000, 2400, 2800, &c.; but in the intervening centuries 1700, 1800, 1900, 2100, &c. it is to be suppressed, and they are to be reckoned common. Moreover, as the equinoxes had fallen back ten days, and the full moons four days, since the Nicene council, A. D. 325, he ordained that ten days should be cut off after the fourth of October, so that the fifth should be the fifteenth. This mode of reckoning, which is now introduced in most countries of Europe, is called the New Style, to distinguish it from the Old Style, or the former reckoning. This is however still not perfectly correct, for as the excess of the Julian year, within the space of four centuries, is three days, one hour, and twenty minutes, that of the Gregorian is one hour and twenty minutes within the same period, or about a day in 7200 years.

Besides these alterations in the form and length of the year, attempts had been made by the Greeks at an early period to adjust in their reckonings the lunar year to the solar year, for which purpose they hit on the device of framing cycles or series of years, which being numbered in an orderly manner from first to last, should return to the same point of reckoning from which they commenced. The first of these cycles was framed by Cleostratus, about 532 years before Christ. It consisted of eight years, or 2922 days, during the course of which 96 lunations would elapse of 29 and 30 days alternately, together with three intercalary months. By this cycle he proposed to adjust the lunar to the solar year, so that at the conclusion of each cycle the moon should be renewed, but he failed in his object, for at the end of 16 years there was found to be an error of three days, which in the space of 160 years would amount to more than a whole month. The Metonic Cycle, formed by Meton at the commencement of the Peloponnesian war, for the purpose of correcting the former, consisted of 19 years, at the end of which the sun and moon would be in the same quarter. This cycle, which was so much esteemed by the Greeks as to be called the Golden Number, nevertheless failed to the amount of eight or ten hours at the end of one period, and of three days in 133 years. The cycle of Eudoxus was an improvement on that of Cleostratus, by subtracting a month of 30 days from a period of 160 years, which was supposed to be equal to the difference that would subsist at the expiration of that period between the solar and the lunar motions. The Calippic Period, contrived by Calippus at the new moon of the summer B. C. 331, was intended as an improvement upon that of Melin, which it multiplied by four, so as to make a period of 76 years, or 27,759 days. As 940 lunations are equal to 97,758 days, 9 hours, 5 minutes, and 9 seconds, which is only 40′ 29″ 57‴ less than 76 solar tropical years, it follows that the lunar motion, according to this calculation, did not vary more than 14 hours, 13 minutes, and 22 seconds, wherefore this period has been chosen to form the basis to the modern cycle of the moon, which is said to have commenced one year before the Christian era. There is also a solar cycle, consisting of a series of 28 years, at the completion of which the same order of bissextile and dominical letters return, a cycle which came into use in the early ages of Christianity; besides the cycle of indiction, or a series of 15 years, introduced in the reign of Constantine; the Epacts, or excesses of any solar revolutions above the lunar, which were introduced for the purpose of ascertaining the time when Easter ought to be celebrated; the Dionysian Period, or series of 532 years, formed by Dionysius Exiguus, a Roman abbot, by multiplying the solar cycle 28 into the lunar 19, for the purpose of restoring the new and full moons to the same day; and lastly, the Julian Period, invented by Scaliger, and so called because it is adapted to the Julian year; this is a series of years formed by the multiplication of the solar and lunar cycles and the cycle of indiction into one another, making the sum of 7980 Julian years.

The application of chronology to history is of comparatively modern date. In Homer and other ancient writers there appears to have been no idea of recording events in any exact order of time. The succession of Juno's priestesses at Argos served Hellanicus for the regulation of his history, but the principal Greek historians followed no other order than what was furnished by the series of events which they narrated. The Roman historian

Livy defines the periods of the events described in his history by the appointment of consuls, and afterwards the succession of emperors and kings served a similar purpose in forming the histories of other European nations, until a more exact computation of time began to be observed.

CHRONOMETER. An instrument for the exact measurement of time.

CHRYSALIS. The second state of an insect, which it passes into from the caterpillar or reptile form, previous to its becoming a butterfly or a moth, &c.

CHUB. A river fish of the carp kind, so called on account of its great head.

CHURCH. Properly signifies the Lord's house; and is generally applied to those buildings which are consecrated to the honour of God, and set apart for his worship. It is also applied to the communicants in a congregation, in distinction from others worshipping with them. It is likewise subjoined to the distinctive appellation of denominations, as the Episcopal church, the Presbyterian church, the Baptist church, &c.

CHURCH SERVICE. The common prayer, collects, and other parts of public worship performed in the church according to the forms of the English church.

CHURCHWARDENS. Officers annually chosen by the ministers and vestry, to take care of the church, churchyards, &c.

CHURN. A utensil in husbandry, which is used in making butter, by a long and violent agitation of the cream.

CHYLE. A white juice in the stomach, consisting of the finer and more nutritious parts of the food, which is received into the lacteal vessels, and serves to form the blood.

CHYLIFICATION. The conversion of food into a nutritious milky fluid, or chyle, in the lower stomach, which conveyed into the blood, sustains the body.

CHYME. The name of that humour which is immediately drawn from the aliment, and afterwards by a farther process is converted into chyle.

CHYMISTRY. The science which teaches the composition and properties of material substances, together with the changes they undergo. The extensive utility of this science is shown by its immediate connection with the arts, subservient to the subsistence or the comforts of man. Dying, bleaching, tanning, glass-making, the working of metals, &c. are chymical operations. In agriculture its use is very important, because it explains the phenomena of the action of manure, &c. The culinary arts, the arts of baking, brewing, distilling, &c. owe their improvement to chymistry. In medicine it affords invaluable assistance, by giving the medical man a knowledge of the various substances used as medicines. In short, there is scarcely any art, trade, or manufacture, that does not depend, either immediately or remotely, upon the knowledge of this science. Besides, it enlarges the mind, by affording us a more extensive and intimate knowledge of nature, and procures for us some of the most sublime pleasures and rational enjoyments. Chymists now distinguish bodies generally into simple and compound substances.

Simple substances comprehend such as have hitherto not been decompounded. Of these some are denominated combustibles, because they can undergo combustion, or, in other words, can burn, as hydrogen, carbon, phosphorus, and borax, besides the alkalis, earths and metals. Some are supporters of combustion, which, though not of themselves capable of undergoing combustion, are necessary to produce this effect in other bodies, of which there are three, namely, the three gaseous bodies, oxygen, chlorine, and iodine. There is one body, namely, azote or nitrogen gas, which is properly an incombustible, because it neither undergoes combustion in itself, or supports it in other bodies. To this list of simple substances must be added four others, which are considered as such by modern chymists, namely, light and heat, which were formerly looked upon as properties of matter, and electricity and galvanism. Light, heat, and electricity, are powerful chymical agents, which produce the most important phenomena.

Compound substances are formed by the union of simple substances with each other, or by that of compound substances with others. That which forms the basis as it were of the combination in this case, is denominated the base or radical; this may either be an acidifiable base or a salifiable base; thus phosphorus is the acidifiable base in phosphoric acid, and potash is the salifiable base in the sulphate of potash. Acids hold the first rank among the compounds. These are formed by the combination of oxygen with some acidifiable base, and are distinguished according to the proportion of the oxygen which enters into the acid by the terminations *ic* and *ous*, as nitric acid and nitrous acid, sulphuric acid and sulphurous acid, &c., the former of which, namely, the nitric and sulphuric acid, denote the large dose or portion of the oxygen; the latter, namely, nitrous acid, the smaller portion. There are also metallic bases, which are distinguished by the termination *um*, as potassium, the base of potash; sodium, the base of soda. When the compounds possess no sensible properties of an

acid, the combinations with oxygen, chlorine, and iodine, form a class of compounds distinguished by the termination ide, if they are supporters of combustion, and et if they are combustibles, as the oxide, chloride, or iodide of arsenic, potash, soda, &c., the sulphuret of potassium, phosphoret of carbon, &c.

Acids for the most part combine with alkalies, earths, and metallic oxides, and form another important class of compounds called salts; these are distinguished by the termination of ate when the acid contains the larger portion of oxygen, and that of ite when the acid contains the smaller portion; thus the combination of sulphuric acid and potash is a sulphate of potash, and that of sulphurous acid with potash is a sulphite of potash. Salts are denominated neutral when the separate qualities of the component principles are not apparent, but when the acid predominates the prefix super is added, and when the base predominates it is denoted by the prefix sub; thus the sulphate of potash denotes the salt in its perfect state, without any excess of the sulphuric acid or the potash; the supersulphate of potash is the same salt with an excess of acid; the subsulphate of potash is the same salt with an excess of base. When an acid combines with two bases, this class of compounds is distinguished by the name of triple salts, as the tartrate of potash and soda, that is, the combination of tartaric acid with potash and soda.

The combinations of metals with each other are called alloys, except those which mercury forms with any other metal, which are called amalgams.

To this list of compound substances must be added several compound combustibles, as alcohol, ether, resins, bitumens, oils, and also soaps formed by the combination of fixed oils with alkalies, earth, and metallic oxide. Besides, water and atmospheric air, which had heretofore been looked upon as simple substances, are now ranked among the compounds.

Chymical action consists of two parts, namely, decomposition and combination. When the constituent parts of bodies are separated from each other, the bodies are said to be decomposed, and the act of separating them is called decomposition: on the other hand, when bodies are so intimately united as to form new and distinct substances, this chymical union is distinguished by the name of combination. The chymical investigation of bodies, therefore, proceeds in two ways, namely, by analysis, that is, the separation of bodies by a series of decompositions and combinations, to come at the knowledge of the constituent parts; and synthesis, by a series of processes to form new compounds; and these two forms of investigation may accompany and assist each other: thus, Epsom salts may be analyzed and shown to consist of sulphuric acid and magnesia, or it may be synthetically compounded by combining magnesia with sulphuric acid, when Epsom salts, in the form of crystals, will be the result.

Chymical investigations proceed on the principle of attraction, in its different forms of affinity, cohesion, &c., and also on that of repulsion. The different processes required in this investigation are solution, neutralization, precipitation, volatilization, evaporation, crystallization, fusion, digestion, calcination, distillation, sublimation, lixiviation, reduction, edulcoration, detonation, fulmination, &c., each of which terms may be found explained in its proper place.

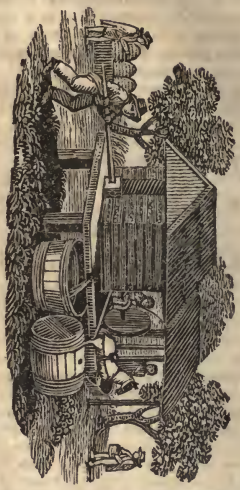
CHYMISTRY, History of. Chymistry, as a practical art connected with metallurgy, or the extraction of metals from their ores, was of high antiquity, for we learn from Scripture that Tubal Cain, the eighth from Adam, was an expert artificer in brass and iron. Various branches of the chymical art, such as the preservation of vinous liquors, dyeing, tanning, making glass, and various preparations in pharmacy and cooking, were in use at a very early period: besides the famous Egyptian philosopher, called by the Greeks Hermes, and the Romans Mercury, is reputed to have been versed in many chymical arts, and to have been the founder of the chymical science, at least in that nation. From the Egyptians, Democritus, a Greek, learned the art of softening ivory, of vitrifying plants, and imitating precious stones, which he communicated to his countrymen. After his time we read of many metallic preparations, as ceruse, verdigris, litharge, &c. Dioscorides describes the distillation of mercury from cinnabar; but their process of distillation consisted in the separation of the air, or the more subtle parts of water, from the rest of the matter, which was done by putting the matter to be distilled into a vessel, the mouth of which was covered with a wet cloth, and by this means the steams of the ascending vapour were condensed, which were afterwards procured by wringing out the cloth. Such is the distillation spoken of by Galen, Oribasius, and Paulus Ægineta. After the conquests of the Saracens in the seventh and eighth centuries, chymical researches began to be more enlarged. Geber, Avicenna, and other Arabian physicians, introduced into the materia medica many preparations both vegetable and mineral; but the knowledge of those chymical agents, the acids and the alkalis, was at that time exceedingly imperfect, for, except the acetous acid and soda, there is no mention of these matters until many years after. Roger Bacon does not appear to have been acquainted with them in the twelfth century, and Raymond Lully only hints at the existence of the marine acid.

There was one circumstance at this period which contributed more than any other to the improvement of chymistry, that was the then growing attachment to the study of alchymy,

and the search after the philosopher's stone, which, though false in principle, yet led in its results to a more extensive acquaintance with the composition of mineral bodies. After the introduction of this art, which, as its name denotes, was of Arabian origin, we read of alcohol and the newly discovered menstrua, which were powerfully applied to the transmutation of metals into gold. Although the futility of such pursuits served to bring the science of chymistry for some time into disrepute, yet the knowledge which was acquired of metals and minerals by such repeated operations upon them, was turned to the useful purposes of medicine. To the alchymists we are indebted for the methods of preparing spirits of wine, aquafortis, volatile alkali, vitriolic acid, gunpowder, &c. In the improvement of medicine by means of chymistry, Basil Valentine stood foremost. In his Currus Triumphalis Antimonii, he communicated to the public a number of valuable antimonial medicines. Paracelsus, another chymical professor, was so sanguine in the application of his favourite science, that he opposed himself to the practice of Galen, and endeavoured to cure all disorders by chymical preparations. He was followed by Van Helmont, Glauber, and Lemery, who all applied their knowledge of chymistry to the service of medicine. The science of metallurgy at the same time made corresponding advances. Agricola, who was a contemporary with Paracelsus, laid the foundation for a correct knowledge of metals. Lazarus Ecker, Schulken, and many other Germans, described the processes of assaying metals. Anthony Neri, Dr. Merret, and Kunkel, the discoverer of the phosphate of urine, have explained the processes of making glass, enamels, &c. but their writings were not entirely free from the alchymical illusions of the day. Kircher and Conryngius, who followed them, succeeded in purifying the science of chymistry from these errors.

Since that time chymistry has assumed a new and systematic form, to which the writings and discoveries of many distinguished men in the course of the last two centuries have materially contributed, as Lord Bacon, Mr. Boyle, and Sir Isaac Newton in England, Boerhaave in Holland, Geoffroy, Reaumur, Lavoisier, &c. in France, and Stahl, Hoffman, and Bergman in Germany. To this list might be added the works of Nicholson, Henry, Thomson, Brande, Ure, and others in our own time, who have digested the improvements and corrected or enlarged them by farther experiments. Chymical investigations are also now materially assisted by an improved apparatus, the most material parts of which are the furnace, retorts, receivers, alembics, cucurbits, matrasses, crucibles, cupels, air-pumps, pneumatic trough, stills, blowpipes, gasometer, &c.

CIDER. A pleasant beverage made from the juice of apples, extracted as represented in the engraving.



CIMA. A moulding, something like an S, otherwise called an O G, ogee, being a wave-like ornament.

CINNABAR. An ore of mercury combined with sulphur.

CINNAMON. A spice, the fragant bark of a low tree growing on the island of Ceylon. Its leaves resembles those of the olive, and the fruit resembles the acorn or olive, having neither the smell or taste of the bark; both yield an oil.

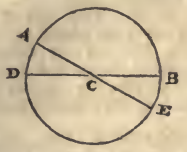
CINQUEFOIL, or Five Leaved Clover. A perennial. This plant is sometimes borne in coats of arms.

CINQUE PORTS. The five ancient ports on the east coast of England, opposite to France, namely, Dover, Hastings, Hithe, Romney, and Sandwich, to which are added as appendages Rye and Winchelsea. They have particular privileges, and are within the jurisdiction of the Constable of Dover Castle, who, by his office, is called Warden of the Cinque Ports.

CIPHER. An arithmetical character, by which some number is noted; particularly the character marked thus 0, which by itself signifies nothing, but set after other figures it increases their value by tens. Also, a mode of writing in concealed characters.

CIRCLE. A curve, all the points of which are equi-distant from the centre, the diameter being to the circumference as 7 to 22, or as 1 to 3.14.159265. The area is determined by multiplying the circumference by a fourth of the diameter, or half the circum-

ference by half the diameter, or the diameter by 0.7853982. In practical mathematics, every circle is supposed to be divided into 360 parts or degrees. A E and D B are diameters; A D and B E are arcs; A C D is an acute angle; and D C E an obtuse angle.



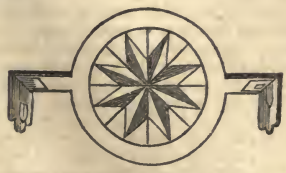
CIRCUITS. Divisions in territorial limits for the convenience of the judiciary, and for the better administration of justice.

CIRCULATION (in Anatomy.) The natural motion of the blood in a living animal, whereby it proceeds from the heart to all parts of the body by the arteries, and returns to the heart by the veins.

CIRCUMFERENCE. The curve line which bounds a circle.

CIRCUMFERENTOR. An instrument used by surveyors for taking angles. It is an instrument (where great accuracy is not desired) much used in surveying in and about woodlands, commons, harbours, sea coasts, in the working of coal mines, &c. &c.

Where a permanent direction of the needle is of the most material consequence in surveying, the instrument is made of brass, and in its most simple state consists of the following parts: A brass index and circle all of a piece. The index is commonly about 14 inches long, and an inch and a half broad, the diameter of the circle about seven inches. On this is made a chart whose meridian line answers to the middle of the breadth of the index, and is divided into 360 degrees. There is a brass ring soldered on the circumference of the circle, on which screws another ring, with a flat glass in it, so as to form a kind of box for the needle, suspended on the pivot in the centre of the circle. There are also two sights to screw on and slide up and down the index, as also a spangle and socket screw on the back of the circle for putting the head of the staff in.



CIRCUMFLEX. An accent in Grammar, marked in Greek thus (˜) in Latin thus (ˆ), to regulate the pronunciation.

CIRCUMLOCUTION. The describing a thing by many words, which might be explained by a few.

CIRCUMSTANTIAL. An epithet in law for evidence drawn indirectly from circumstances, as distinguished from positive proofs.

CIRCUMVALLATION, or A LINE OF CIRCUMVALLATION. A trench thrown up quite round a besieger's camp.

CIRCUS. A circular building at Rome, where games were exhibited; in Architecture, an assemblage of houses built so as to form a circle.

CISTERNS. Are vessels employed for the reception of rain, or other water, either under ground, such as those of navigable canals, &c. or above ground, for domestic and other purposes.

Anciently there were cisterns all over the country of Palestine. There were some likewise in cities and private houses. As the cities for the most part were built in mountains, and the rains fell regularly in Judea at two seasons of the year only, in spring and autumn, people were obliged to keep water in their cisterns in the country for the use of their cattle, and in cities for the convenience of the inhabitants.

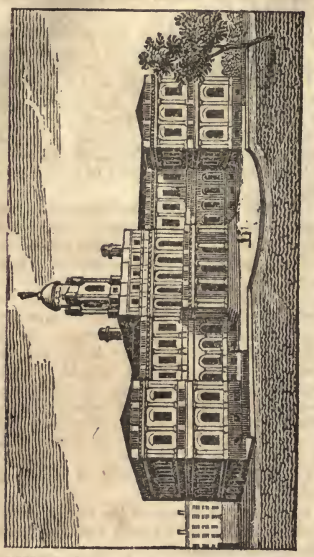
CITRIC ACID. The acid of limes, or lemons.

CITRON. A species of the lemon, which is much cultivated in Persia and the warm climates of Europe.

CITY. A dense population, with a mayor and alderman at the head of the corporation.

CITY HALL. An edifice in which the courts of justice for a city are held, or in which the corporation transact the public business of a city. The engraving represents the City Hall, New-York, which is a superb edifice situated at the head of a handsome common, called the Park, (which is enclosed with an elegant iron railing,) near Broadway. It is built of white marble, and cost upwards of

$500,000. It is 216 feet in length, and 105 in breadth.



CIVET CAT. An animal like a wolf or a dog more than a cat; it is a native of the Indies and South America, and is remarkable for a bag under its tail that contains a fat substance, having the smell of musk, and used as a perfume.

CIVIC CROWN. A garland composed

of oak leaves, which was given to a Roman soldier who had saved the life of a citizen.

CIVILIAN. A doctor or professor of the civil law.

CIVIL LAW, otherwise called IMPERIAL LAW. The law of the Roman empire, digested from the laws of the republic and those of the emperors, and adopted by most of the nations of Europe.

CIVIL YEAR. That form of the year which each nation has adopted for computing their time by. The civil year in England and other countries of Europe and America, consists of 365 days for the common year, and 366 days for leap year, which happens every fourth year.

CLARIFICATION. The making any liquid, by a chymical process, clear from impurities.

CLARIONET. A wind instrument of the reed kind.

CLARO, or CHIARO OBSCURO (in Painting.) The art of distributing to advantage the lights and shadows of a piece.

CLASS. A term applied to the general divisions of any subject, as in the Linnæan system, animals, plants, and minerals, are divided into classes.

CLASSIC. The best Greek and Roman authors, whose works, from being copied and revised during many ages, when every copy was an edition, acquired a certain mechanical perfection; and being the only books when literature began to be cultivated in Europe, their languages were taught in schools founded at that time, and have continued in fashion even to this day. The chief poets of antiquity were Homer, Virgil, Horace, and Lucretius; the dramatists, Aristophanes, Æschylus, Euripides, Terence, and Plautus; orators, Demosthenes and Cicero; historians, Herodotus, Xenophon, Tacitus, Livy, Sallust, Plutarch, Cæsar; in medicine, Hippocrates and Galen; and the chief philosophers were Pythagoras, Thales, Plato, Aristotle, Epicurus, Pliny, and Seneca; the mathematicians were Euclid, Archimedes, Aristarchus, Diophantus, and Ptolemy; writers who may be considered as the fathers of learning, much of whose knowledge is, however, rendered obsolete by modern discoveries and improvements.

CLAVICLES. The two channel bones which fasten the shoulder bones and the breast bone.

CLAY. A sort of fat clammy earth, stiff, viscid, and ductile to a great degree. The clays are opaque and noncrystallized bodies, and of dull fracture. They form with water a plastic paste, possessing considerable tenacity, which may be hardened with heat so as to strike fire with steel. The principal clays are porcelain clay, consisting of silica and alumina; marl clay, containing some carbonate of lime; pipe clay, requiring a high temperature for fusion; and potter's clay, which is used for coarse pottery.

CLEMATIS. A climbing shrub, otherwise

called the Virgin's Bower, or Wild Climbers. The common sort, bearing a bluish flower, is a native of the south of Europe.

CLERGY. A general name for all persons in holy orders.

CLERK (in Law.) A clergyman; in Commerce, one who keeps a merchant's accounts.

CLIENT. One who retains a lawyer to manage or plead his cause.

CLIFF or CLEF (in Music.) A mark set at the beginning of a piece, to show the key in which it is to be performed.

CLIMACTERIC, among physicians and astrologers, a critical year in a person's life. According to some this is every seventh year, but others allow only those years produced by multiplying 7 by the odd number 3, 5, 7, 9, to be climacterial. These years they say bring with them some remarkable change with respect to health, life, or fortune.

CLIMATES. Spaces upon the surface of the terrestrial globe contained between two parallels of latitudes, so far distant from each other, that the longest day on one parallel differs half an hour from the longest day on the other.

CLOAK. An upper loose garment, worn over the clothes in cold or rainy weather.

CLOCK. A machine for measuring time, which tells the hour by a stroke upon a bell. In order that the clock may be an equable measure of the solar day, which is unequal, it is usual for clocks and watches to go a few minutes faster or slower than the sun.

CLOISTERS. Covered passages, such as were formerly attached to monasteries or other religious houses.

CLOTH. Any kind of stuff that is woven or manufactured in the loom, whether it be made of wool, hemp, or flax.

CLOTHIER, or CLOTHWORKER. A manufacturer of cloth.

CLOUD. A visible aggregate of minute drops of water suspended in the atmosphere. The same aggregate which in this situation is called a cloud, obtains the name of mist, when seen to arise from the earth or waters; and fog, when it envelopes and covers the observer. Yet the two latter, viewed from a great distance or elevation, present all the appearance of clouds; while those, in their turn, become mists and fogs, in proportion as we approach and penetrate them. It is concluded, from numerous observations, that the particles of which a cloud consists, are always more or less electrified; and this has hence been considered as the cause of the formation of all clouds whatever, whether of thunder, hail, rain, or snow.

CLOVER. A kind of three leaved grass or trefoil; it is much used as a food for cattle.

CLOVE TREE. A native of the Moluccas. The blossoms are first white, then green, and at last red and hard, when they are called cloves. When dried, they turn yellow, and then dark brown. The clove is also cultivated to great extent at Cayenne, in South America, and forms an important article of commerce.

CLYSTER. An instrument for the injection of any fluid into the body.

CO. An abbreviation of company.

COACH. A well-known vehicle, invented in Hungary in the 16th century, and used by

ladies only in England in the age of Elizabeth; since adopted as a travelling vehicle in many countries. It is made in various shapes, each having a different name.

COADJUTOR. One who assists another in any office.

COAGULATION. The rendering of a fluid body of a thicker consistence, by drawing out some part of it in vapours by means of fire, or by the addition of something by which it is decomposed.

COAK. See COKE.

COAKING. A sea term, for the operation of uniting two or more pieces of timber together in the centre, by means of tabular projections.

COAL. An inflammable substance, of a very black colour, somewhat shining, opaque, soft, dry, and light, in comparison with the strata in which it is found. It occurs in beds, varying in thickness from an inch to many

fathoms. It is used for fuel, and found widely scattered over the globe. The most valuable and extensive beds of coal which have been found and wrought are in Great Britain. These vast magazines of fuel were most evidently placed by an all-wise Being in the bowels of the earth, in such positions and situations as are the most apt and convenient for the use of man, and where his industry and ingenuity may be exercised.

COAL MINE. An excavation regularly formed under the earth, from which coals are dug. There are many coal-mines in the north of England, and in the United States.

COAST. The edge of the land next to the sea.

COASTER. A vessel employed in going from one port to another along the coast.

COAT. A garment worn commonly uppermost; a thin covering laid or done over any thing, as a coat of paint, &c.; in Anatomy, the membraneous cover of any part of the body, as the coats of the eye, the stomach, &c.

COAT ARMOUR, or COATS of ARMS. Armorial ensigns or bearings, which were originally painted on the coats of arms.

COAT OF MAIL. A piece of armour made in the form of a shirt, and wrought over with many iron rings.

COBALT. A mineral of a gray colour, consisting of silver and arsenic, which latter is obtained from it in great quantities. It has never been found pure in nature, but mostly in the state of an oxide, or alloyed with other metals.

COCAO. See COCOA.

COCCULUS INDICUS, or INDIAN BERRY. The poisonous fruit of the *Menispermum*, L. or Moon-seed, an exotic genus of plants, growing in the southern parts of Europe, whence it is imported. It possesses an intoxicating property, and is on that account too frequently mixed with malt liquors, though such nefarious practice is expressly prohibited by legislative statutes. The seeds of this plant are made into a paste in the Levant, where it is employed as a specific for cutaneous eruptions.

COCHINEAL. An insect, a native of the warmer climates of America, particularly of

Oaxaca, in Mexico. It is found on a plant called nopal, or Indian fig tree. The female, which alone is valued for its colour, is ill shaped, tardy, and stupid; the male is small, slender, and active. It is of the size of a tick. At a suitable time these insects are gathered and put in a pot, where they are confined for some time, and then killed by the application of heat. These insects thus killed form a mass or drug, which is the proper *cochineal* of the shops. It is used in giving red colours, especially crimson and scarlet, and for making carmine.

COCHLEA (in Anatomy.) The internal cavity of the ear, so called from its resemblance to the spiral shape of the cochlea, or snail's shell.

COCHLEA (in Mechanics.) One of the five mechanical powers, otherwise called a screw.

COCK. The male of most birds, particularly of the well-known domestic fowl in a farmyard. The cock was first introduced into Europe from Persia, and is eminently distinguished for his courage, especially when opposed to one of his own species.

COCK. The name of a part of several instruments, as that part of the lock of a musket which sustains the jaws, or pieces of iron that receive the flint; also the wrought piece that covers the balance in a clock or watch; and the spout which is put into beer or water barrels, &c.

COCKATOO. A species of parrot, having a short tail.

COCKCHAFFER, or TREE BEETLE. A mischievous insect, which devours the leaves

of trees, &c. The grub, which is soft and gray, with testaceous head and legs, remains in the earth three or more years before it is transformed into the perfect insect.

COCKET. The office at the Customhouse where the goods to be exported are entered; also the Customhouse seal, or the parchment sealed and delivered by officers of the customs to merchants, as a warrant that their goods are customed.

COCK FIGHTING. A cruel sport, which consists in pitting two cocks against each other, of the game breed, and armed with spurs, which inflict deadly wounds. This entertainment holds a prominent rank among the amusements of the vulgar. It was, until lately, permitted in England in a sort of Theatre, called the Royal Cockpit. Cock-fighting is a mixture of barbarity, and of that most disastrous of passions—gambling.

COCKING (in Carpentry.) A method of securing beams to wall plates.

COCKLE. A sort of shell fish.

COCKNEY. A nick name given to one who is born and bred in the city of London, within the sound of Bow bells.

COCKPIT. A place where cocks fight.

COCKPIT. The place in a ship of war, where the wounded are dressed.

COCKROACH. A troublesome insect, which enters chests of clothes, meal tubs, pantries, &c. They avoid the light, and have a very unpleasant smell.

COCK'S COMB. A fine plant cultivated in gardens and hot houses. Some sorts are annuals and some perennials.

COCKSWAIN, vulgarly called COCKSON. An officer who has charge of the cock-boat.

COCOA. A nut, the fruit of the cocoa tree, a tropical production, from which chocolate is prepared.

COCOA NUT TREE. A tree common in Asia and South America, which yields the fruit called the cocoa nut. This fruit is a berried drupe, the shell of which is of a bony substance, containing a kernel and a sweet refreshing liquor, called by the natives toddy. This tree grows to the height of fifty feet, with leaves or branches often fourteen feet long, and producing a shelly fruit, which hangs in clusters. The natives draw from the tree a very agreeable liquor; the leaves are wrought into sacks, hammocks, &c., and the filaments of the outer coat of the nut are made into cables.

COCTION. The reducing the aliments to chyle; in Surgery, the reducing morbific matter to a healthy state.

COD. A large fish inhabiting the northern seas, but particularly the banks and shores of Newfoundland. The cod-fishery is a source of considerable revenue to the inhabitants of the eastern parts of the United States.

COD FISHER. A vessel employed in the cod fishery; also the person employed.

CODEX. A name particularly applied to the volume containing the ancient Roman or Imperial law.

CODICIL. A supplement to a will.

CŒUR DE LION. Heart of a lion.

COFFEE. The name given to a liquor made by a decoction, or an infusion, of the seeds of the coffee berry, after they have undergone torrefaction, and have been ground to powder. The use of coffee, as a beverage, in the west of Europe, appears to have been known about the end of the 16th century. Great care must be taken not to roast coffee too much. As soon as it has acquired a deep cinnamon colour, it should be taken from the fire and cooled; otherwise much of its aromatic flavour will be dissipated, and its taste will become disagreeably bitter. Boiling hot water extracts from coffee, which has been properly roasted and ground, an aromatic substance of an exquisite flavour, together with a considerable quantity of astringent matter, of a bitter, but a very agreeable taste; but this aromatic substance, which is supposed to be an oil, is extremely volatile; and is so fully united to the water, that it escapes into the air with great facility.

COFFEE ROASTER. A hollow iron cylinder into which coffee berries are put, and turned about in a strong heat, till they are fitted for grinding in a mill.

COFFEE TREE. A tree of the jassamine kind, an evergreen shrub, growing in Arabia, the island of Java, and the West Indies. It seldom rises more than 16 or 18 feet high; the flowers are of a pure white, and the berries grow in clusters, resembling cherries.

COFFER. A chest or trunk; in Mineralogy, a trough in which tin ore is broken to pieces; in Fortification, a trench cut in the bottom of a dry ditch.

COFFERDAM. A circular double range of piles rammed with clay, within which the foundations of bridges are laid.

COFFIN. A case or box for the reception of a dead body that is to be buried; in the veterinary art, the whole hoof of a horse's foot above the coronet.

COG. The tooth of a wheel.

COGNIZANCE (in Law.) The hearing of a thing judicially; also the acknowledgment of a fine.

COHESION, OR ATTRACTION OF COHESION. That power by which the particles of bodies are held together: the absolute cohesion of bodies is measured by the force necessary to pull them asunder.

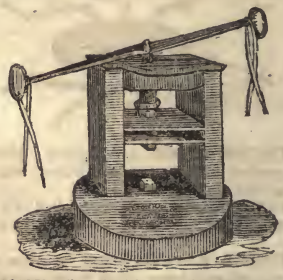
COHORT. A military body among the Romans, consisting of the tenth of a legion, or about 500 men.

COIF. A sort of hood or cap for the head, formerly worn by sergeants at law.

COIL. The ring or circle formed by a cable in coiling or winding it.

COIN. A piece of metal stamped with certain marks, and made current at a certain value.

COINING. The process of stamping or making coins, which has undergone an entire change within the last few years, in consequence of the invention of machinery, first made by Messrs. Bolton and Watt, of England. The coining press is now worked by means of complicated machinery, placed in an apartment over the coining room, and connected with the steam engine. To this is attached a contrivance by which it feeds itself with the blanks to be impressed, and removes them the instant they have received the impression. There are eight of these presses fixed in the coining room in the English Mint, which, by the aid of the machinery, may be worked by four boys, so as to strike off 20,000 pieces of money in an hour.



COINS (in Architecture.) The angles formed by the two sides of any building.

COINS (in Gunnery.) Large wedges of wood for altering the position of a gun.

COKE, or COAK. A preparation of fossil coal, whereby it is deprived of the naptha, bitumen, or asphaltum, it may contain. In great towns which are lighted with gas, coke is obtained in great abundance from the gas-works, being left in the retorts after the gas is driven off by the heat.

COLD. In common language it denotes the sensation which is felt, or the effect which is produced, by the abstraction of heat; that is, heat and cold are opposite to each other, and the existence or increment of one, is equal to the want or decrement of the other; so that the same degree of temperature may be called hot or cold, according as it is compared with a colder or hotter temperature. Thus, the climate of Great Britain is a cold climate in comparison with the West India islands; and a hot climate in comparison with that of Siberia. If a man warms one of his hands near a fire, whilst he cools his other hand by means of ice; and if afterwards he plunges both his hands in a basin of water of the common temperature of the atmosphere, that water will feel cold to the hand that was heated, and hot to the other hand. From this it appears that the cold is not any thing real, but merely a privation of heat; so that instead of saying, that a body has been cooled

to a certain degree, it may with equal truth and propriety be said, that the body has been deprived of heat to that certain degree.

COLEOPTERA. The first order of insects in the Linnæan system, comprehending all those with four wings, as the beetle, glow-worm, lady-bird, leather-eater, &c.

COLEWORT, or KALE. A variety of the cabbage, which thrives in the winter, and improves from the action of the frost upon it.

COLIC. A violent pain in the abdomen, so called from the colon, the intestine formerly supposed to be affected.

COLLAR (in Heraldry.) An ornament for the neck, worn by knights, such as the collar of the order of the Garter in the subjoined figure.

COLLATERAL (in Law.) A term for what is sideways, or not direct, as collateral kinsmen, those who are not descended from one common stock, as the issue of two sons, who are collateral kinsmen to one another.

COLLATING (among Bookbinders.) The examining the whole number of sheets belonging to a book, in order to see if they are all gathered properly.

COLLATION OF A BENEFICE. The bestowing of a benefice by the bishop, when he has the right of patronage; it differs from institution in this, that institution into a benefice is performed by the bishop at the presentation of another who is patron.

COLLATOR. One who compares copies or manuscripts.

COLLEAGUE. An associate in the same office or magistracy.

COLLECT. A short prayer, particularly such prayers as are appointed with the epistles and gospels in the public service of the church of England.

COLLECTION. The act of collecting or bringing things together from different quarters, as a collection of money for charitable purposes, either at the church door or from house to house; also, that which is collected or brought together into an assemblage, as a collection of coins, paintings, &c.

COLLEGE. Any establishment for the study of the sciences.

COLLEGIATE. An epithet for a church that is endowed for a society, &c.

COLLIER. A vessel employed in carrying coals from one port to another; also, one who works in the coal mines.

COLLUSION (in Law.) A compact between two persons to bring an action one against the other for some fraudulent or unlawful purpose.

COLOCYNTHIS. See COLOQUINTIDA.

COLOGNE EARTH. A substance used by painters, much approaching to amber in its structure, and of a deep brown.

COLON (in Anatomy.) The second of the three large intestines; in Grammar, a point marked thus (:) to divide a sentence.

COLONEL. The first in command of a regiment.

COLONNADE. A range of pillars running quite round a building.

COLONY. A company of people removed from one country to another, where they form a settlement under the sanction of the government; also, the place where such a settlement is formed, as the colonies belonging to Great Britain in the East and West Indies, and in North America, &c.

COLOQUINTIDA. The fruit of the wild gourd, brought from the Levant. The pulp, which is light, spongy, and white, is remarkable for its intense bitterness, whence it has the name of the bitter.

COLOSSUS. A statue of a prodigious size, such as that of the sun anciently in the harbour of the island of Rhodes. It was placed at the entrance of the harbour, with the right foot standing on one side the land and the left on the other.

COLOURS. They were supposed by the ancients to be an inherent property of the coloured substance, and were therefore defined to be the sensation produced by looking on any coloured body, or the quality in bodies which produces this sensation; but, according to the doctrine of Sir Isaac Newton, which is now generally admitted, the difference of colour lies in the different rays of light, so that colour may be defined the property possessed by the elementary rays, separated by any means whatever, of exciting different sensations, according to their different degrees of refrangibility. Colours are either primary or secondary. The primary or original colours are the colours of simple or homogeneal light; or produced by rays that have the same degree of refrangibility, and the same magnitude of their parts: of these colours there are seven, namely, violet, indigo, blue, green, yellow, orange, and red, which all admit of infinite gradations. Secondary, or heterogeneous colours, are those which are compounded of the primary ones: of this kind of colours the most remarkable is that of whiteness, which requires all the primary colours to enter into its composition; whereas, on the contrary, black is produced by the absorption of all the rays of light, so that being suppressed in the black body they are not reflected outward According to this theory, the differ-

ence of colours in natural bodies is supposed to arise from the disposition which they possess to reflect rays of this or that colour alone, or of this or that colour more abundantly than any other.

COLOURS (in Painting.) The various tints which are produced by the different mixture and application of certain drugs.

COLOURS (in Heraldry.) The tinctures with which the field or any part of the escutcheon is distinguished, namely, or, yellow; argent, white; gules, red; azure, blue; sable, black; and vert, green.

COLOURS. A military term, for the banners, flags, and ensigns used in the army.

COLUMN. A cylindrical pillar, which serves either for the support or ornament of a building. It consists of a capital, which is the top or head; the shaft, which is the cylindrical part; and the base, or that on which it rests. Columns are distinguished as to their form into the Doric, Ionic, Corinthian, Composite, and Tuscan.

COLUMN (in the Military Art.) A long deep file of troops or baggage.

COLUMNIFERÆ (in Botany.) One of Linnæus's natural orders, including the mallow-like plants.

COLURES (in Astronomy.) Circles which pass through the equinoctial and solstitial points, and meet at the poles.

COMB (in Commerce.) An instrument for disentangling flax, wool, hair, &c. Combs are made of the horns of bullocks, of elephants' teeth, tortoise shell, and box or holly wood. Bullocks' horns are prepared by sawing off the tips, then holding them in the flame of a wood fire till they become soft. In this state they are plunged into water, from whence they come out hard and flat. They are next sawn into proper lengths, and, to cut the teeth, each piece is fixed in a tool called a clam. The teeth are cut with a fine saw, or rather a pair of saws, and they are finished with a file. The process for making ivory combs is nearly the same as the above. A method has been recently invented for cutting combs by machinery.

COMBINATION (in Chymistry.) The intimate union of the particles of different substances, so as to form a new compound; in Mathematics, the alterations or variations in all possible ways of quantities, letters, sounds, and the like; thus, two square pieces, each divided diagonally into two colours, may be arranged and combined sixty-four ways.

COMBUSTIBLES (in Chymistry.) All substances which have the property of uniting with the supporters of combustion, such as sulphur, phosphorus, carbon, &c.

COMBUSTIBLE. A body which in its rapid union with others, causes a disengagement of heat and light. To determine this rapidity of combination, a certain elevation of temperature is necessary, which differs for every different combustible. Combustibles have been arranged into simple and compound. The former consists of hydrogen, carbon, boron, sulphur-phosphorus, and nitrogen; besides all the metals. The latter class comprehends the hydrurets, carburets, sulphurets, phosphurets, metallic alloys, and organic products.

COMBUSTION. A body burning in gas capable of supporting flame. Supporters of combustion have the property of shining in the dark. Various kinds of animal and vegetable substances seem to have a great deal of this kind of phosphorus; the glow-worm is a remarkable instance. Dead fish, sea-weed, and numbers of insects, have this property in a great degree. Instruments for measuring the degree or intensity of light are called photometers. Oxygen is a substance known only in combination with other bodies, and has never been obtained alone. It is absorbed by combustible bodies, and converts them into acids. Oxygen is necessary for combustion, uniting itself to bodies which burn, augmenting their weight, and changing their properties. It is necessary for the respiration of animals. It is a constituent part of atmospheric air, of water, of acids, and of all bodies of the animal and vegetable kingdoms. This is the principal supporter of combustion, and the only one which need here be described.

COMEDY. A dramatic representation of the light, humorous, and pleasant kind, particularly intended to ridicule the follies of men.

COMET. An opaque, spherical, and solid body, like a planet, performing revolutions about the sun in elliptical orbits, which have the sun in one of the foci. It is divided into the nucleus or dense part; the head; the coma, a faint light surrounding the head; and the tail, which is the long train of light by which these bodies are distinguished. The comet is sometimes borne in coats of arms, when it is said to be streaming.

COMMA (in Grammar.) A point marked thus (,) and put between words and sentences.

COMMANDER. A military term, for one who has the command of a body of men.

COMMENTARY. An explanation of the obscure passages in an author.

COMFREY (Symphytum officinale, L.) A native, perennial plant, which grows about two feet high, is found on the banks of rivers and wet ditches; and produces yellow-white flowers, in the months of May and June. It is eaten by sheep and cows, but horses, goats, and hogs, refuse it. The leaves of this plant impart a grateful flavour to cakes and panada; the young stems, when boiled, are excellent and nutritious eating. A decoction of the stalks, with leaves and flowers, gives to wool prepared by a solution of bismuth, a fine and permanent brown colour.

COMMERCE. The intercourse of nations in each other's produce or manufactures in

which the superfluities of one are given for those of another, and then re-exchanged with other nations for mutual wants.

COMMERCE, History of. The intercourse between different nations for purposes of commerce, doubtless took place soon after the dispersion of mankind, for we find it recorded in holy writ that the Ishmaelites, who were settled in higher parts of Arabia, carried on a trade with Egypt in spices, balm, and myrrh, and that in one of their journey's Joseph was sold to them by his brethren. As the commodities in which they dealt, as gums and sweet scented woods, which were to be procured only from the East Indies, there is no doubt that these people and the Egyptians were among the first who made distant voyages and travels in the way of trade. They were succeeded by the Phœnicians, an adventurous people, who were the first that raised any naval power that makes any figure in history. By their enterprise and industry they became a wealthy and luxurious people, and their two cities, Tyre and Sidon, became the emporiums of the universe. In the time of David and Solomon we find the Jewish nation availed themselves of the assistance of this people in equipping their fleets. After the destruction of old Tyre, a new city arose out of the ruins, which rivalled the other in wealth, industry, and commerce; and while in her glory she planted the colony of Carthage, on the coast of Africa, which from the convenience of her situation and the industry of her inhabitants, rose to an extraordinay pitch of prosperity. The Carthaginians made themselves masters of Spain, and of the islands of Sicily and Sardinia, discovered the greatest part of the coast of Africa and the Canary Islands, traded with Britain by the route of the Scilly Islands, and are supposed to have made their way even to America. In the mean time Egypt, under the Ptolemies, also attained a high degree of grandeur and affluence. Ptolemy Philadelphus in particular, by encouraging trade, made his people rich and himself powerful. Such was the greatness of Alexandria alone, that the produce of the customs fell little short of two millions annually. Under the Romans commerce was encouraged in every part of the world where they had any influence, as may be learned not only from historians, but also from various medals and inscriptions, showing that every considerable city had several colleges or trading companies.

On the decline of the empire, commerce was, owing to the unsettled state of all Europe, and the constant irruption of the barbarous tribes, almost at a stand. About this period it happened that some straggling people, either forced by necessity or led by inclination, took their abode in a few scattered islands that lay near the coast of Italy, and as these islands were separated from each other by narrow channels, full of shallows, that prevented strangers from navigating, the inhabitants found themselves protected from all hostile inroads, and in the midst of this security they followed their pursuits with so much industry and success, that these once insignificant islands rose in the space of two centuries, that is, from the sixth to the eighth century, into a great city and a powerful republic. Such was the humble origin of the once potent state of Venice, which by degrees acquired an extent of commerce and a naval power that had not for a length of time any rival. She drew to herself the profits of the Indian trade, and by availing herself of every favourable conjuncture, she not only monopolized the trade of all Italy, but of all the countries in subjection to the Mahometans; but as other countries in Europe began to enlarge their commerce, Venice lost the monopoly, and this combining with her own immoderate ambition, caused the decay of her trade and the decline of her power. From the league of Cambray, which was formed against her by the powers of Europe, Venice may be said to have ceased to hold the first rank as a commercial state.

The origin of the proud city of Genoa, as it was called, was very similar to that of Venice. Like Venice, she rose from an assemblage of fugitives and adventurers on the rocky, barren, and inhospitable shores of Liguria; and like her she gained, by the industry and perseverance of her inhabitants, a prodigious extent of commerce. Her merchants traded with all countries, and throve by becoming the carriers from one country to another. Her fleets were formidable and her conquests numerous; but after perpetual wars with her rival, Venice, she was at length compelled to yield the dominion of the sea, and finally lost all her consequence.

In the mean time, the trade of Germany was rising in consequence. Some commercial cities, confederating together, formed a commercial league, known by the name of the Hanseatic League, the object of which was, by combining their resources, to form a fleet for the protection of their trade with other countries. These cities not only associated among themselves, but also formed alliances with other states, as England and France, and had a code of laws which were respected and observed, under the name of the Lex Mercatoria, for a long time throughout all Europe. In

this manner the Hanse Towns acquired a considerable share of influence, and were respected by all the sovereigns in Europe. The kings of France and England granted them considerable privileges, exempting their vessels in case of shipwreck from all demands whatsoever, either on the part of the admiralty or of private persons, and respecting their flag in times of war. This good understanding between them and the states of Europe was considerably increased by the freedom with which they lent their money to different princes in time of need, particularly during the crusades, when they gave powerful succours both in ships as well as in money. This confederacy did not, however, always retain its moderation; for, as they increased in wealth and power, so they grew ambitious and domineering, and more than once they ventured to set themselves up against the states of Germany; in consequence of this, the German princes gradually withdrew the cities that were subject to themselves from the confederacy, and thus effected its dissolution. The only cities which now retain the name of Hanse Towns, and some other vestiges of the Hanseatic league, are Hamburg, Bremen, and Lubeck.

The next important change in the state of European commerce was brought about in Portugal and Spain, by means of the discoveries which took place in the fifteenth and subsequent centuries. To the spirit and enterprise of Emanuel, King of Portugal, we are indebted for the discovery of the Cape of Good Hope, which was effected by Vasco de Gama, in 1498, and by opening a new way to the Indies afforded to the Portuguese an opportunity of making conquests and settlements which secured to them the commerce of India, which the Venetians had hitherto enjoyed through the medium of the Arabians. The discovery of America by Columbus, which followed quickly after, paved the way for a still greater extension of mercantile enterprise, which, though at first enjoyed only by the Portuguese and Spaniards, was at length shared by other states. The Dutch, an enterprising people, were the first who wrested from the Spaniards a portion of their conquered possessions, and made so good a use of the advantages they gained as to become one of the greatest trading people in Europe. By the help of increasing wealth, they converted their little fishing villages into large and populous cities and towns. Although their country was far from being fertile, and their native commodities few or none, yet by commerce they succeeded in filling their storehouses with all the productions and manufactures of the world.

Having given this general sketch of commerce from its earliest beginnings, we must not close this account without making mention of the commerce of Great Britain, which, though among the last to avail itself of this source of wealth and aggrandizement, has by slow and gradual steps raised its commerce to a pitch which has never been, and probably never can be, surpassed by any nation. It appears that a commercial intercourse with Britain was begun at a very early period, and that the Phœnicians and Carthaginians traded with this island for the tin of Cornwall, but it is probable that the native Britons did not for many ages take any active part in this traffic, or make any attempt to share in the advantages of commerce beyond the giving their commodities to such as wished to trade with them. They had nothing better than leather or wicker boats, which were too slight to enable them to leave their shores, even so as to cross the Channel.

The Saxons made considerable endeavours to extend their intercourse with foreign nations, particularly in the time of Alfred the Great, who sent people as far as the East for commercial purposes, as also for the sake of procuring information. After the Conquest, our princes were for a long time too much engaged in political and military concerns to turn their attention to this subject, and little was done beyond that of giving encouragement to foreigners to settle in England or to have dealings with her. One provision of Magna Charta held forth indemnity and protection to foreign merchants in the passage to and from England, as also during their stay there.

Safe conducts were afterwards given to the English going abroad, which afforded them the opportunity of carrying on a traffic for their commodities with foreign nations. In consequence, we find that staples or markets were established both there and on the continent, where wool, lead, and other productions, were bought and sold; and as encouragement was given to the Hanseatic League, a trading company was in consequence formed in the reign of Edward I. first called the Company of Merchants trading to Calais, &c., afterwards the Merchant Adventurers of England, or the Company of Merchant Adventurers trading to Hamburg. This company, which is the first of the kind in England, was incorporated by Edward I. in 1296. In the reign of Edward III. commerce and manufactures both met with considerable encouragement, but the intercourse of foreigners with England was now more encouraged than that of Englishmen with foreign nations. In consequence the staple or mart was confined to certain towns, where, by the statute of the staple, as it was called, it was ordained that foreigners might resort for the purchase of our commodities, but Englishmen were prohibited under great penalties from exporting any themselves. A number of other laws were made for the establishment and government of the staple, which formed that branch of the English law since known by the name of the Law-Merchant. For the encouragement of

manufacturers, protection was given to clothmakers to come from foreign parts and reside there. In the reign of Edward VI. the principle of confining her commerce within the limit of the country was, in consequence of the recent discoveries, somewhat altered. An intercourse with Russia was commenced by means of some English adventurers, who going on a voyage of discovery in order to find out a north-east passage to China, came to the port of Archangel, where they were well received by the Muscovites, whence they afterwards formed a company and received a charter to secure to themselves the trade to Russia. This company was incorporated in the reign of Philip and Mary, under the name of the Russia Company. The reign of Elizabeth was still more favourable to commercial adventures of every kind. Drake, Sir Walter Raleigh, and Henry de Clifford, Earl of Cumberland, distinguished themselves by their voyages and discoveries; besides which, several fresh companies were formed under the auspices of this queen. The Eastland Company was incorporated under the title of the Company of Merchants to the East; the Turkey or Levant Company was also incorporated in 1581; but the most important of all the companies which had hitherto been formed was the East India Company, which was first established by charter in 1600. In the reign of William III. a new East India Company was formed, which was for a time a rival to the old one, but in 1708 the two companies were consolidated into one; since which they have experienced considerable vicissitudes, and in consequence of the numerous wars in which they have been engaged, their affairs were at one time so reduced that they were obliged to apply to the government for assistance, in consequence of which they have lost much of their independence, and are necessarily subject to more control than they were formerly. English commerce continued to increase from the reign of Elizabeth until the last war, when England had at one time almost the whole trade of the universe in its hands, with the exception of what fell to the share of the Americans. The imports of England have sometimes exceeded thirty millions, and the exports fifty millions.

COMMISSARY (in Military Affairs.) An officer appointed to inspect musters, &c.; in Ecclesiastical Affairs, a deputy, or one who supplies the place of the bishop.

COMMISSION (in Law.) The warrant, or letters patent, by which one is authorized to exercise jurisdiction; in Military Affairs, the warrant or authority by which one holds any post in the army; in Commerce, the order by which any one traffics or negotiates for another; also, the per centage given to factors and agents for transacting the business of others.

COMMITTEE. A certain number of persons appointed for the examination of any matter; in general, he or they to whom any matter is referred by some legislative body for farther examination.

COMMODITY. Any merchandise or ware which a person deals or trades in.

COMMODORE. An officer in the navy, invested with the command of a detachment of ships of war destined for a particular purpose. The Commodore of a convoy is the leading ship in a fleet of merchantmen.

COMMON (in Law.) A right or privilege claimed by more persons in another man's lands, waters, woods, &c.

COMMON COUNCIL. A court in a city, composed of the Mayor, Aldermen, and Assistant Aldermen.

COMMON LAW. Laws which are constituted by ancient decisions and immemorial practice, founded on social necessity, and on reason and justice; but subordinate to positive enactments of the legislature, called Statute Law.

COMMON PLACE BOOK. A sort of register or orderly collection of things worthy to be noted in a book.

COMMON PLEAS. A court of law devoted to trials between individuals.

COMMON PRAYER. The liturgy, or public form of prayer prescribed by the church of England, to be used in all churches and chapels at stated periods.

COMMONS. A word sometimes applied to an uncultivated tract of country, and at others to the body of the people; and hence, one branch of the British parliament is called the House of Commons, its 658 members being elected, within every seven years, by the people.

COMMONS (in Law.) See DOCTORS COMMONS.

COMMONWEALTH. That form of government in which the administration of public affairs is common or open to all, with few or no exceptions. It is distinguished from monarchy or aristocracy.

COMMUNION. A name given to the sacrament of the Lord's supper.

COMMUNION SERVICE. The office for the administration of the holy sacrament in a church.

COMMUNION TABLE. The table at which communicants partake of the Lord's supper.

COMMUTATION (in Law.) The substitution of one punishment for another.

COMPANY (in Law.) A society of traders forming a corporate body; in Commerce, a trading association, in which several merchants form a joint stock, with which they trade for the common interest of the stock holders, such as the East India and other companies. See COMMERCE.

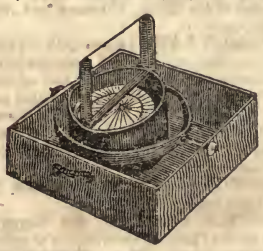
COMPANY (in Sea Affairs.) The whole crew of a ship, including the officers.

COMPARATIVE ANATOMY. That extension of the art of dissection which anato-

mists have practised for the purpose of comparing the structure of all organized bodies with one another. The number of its discoveries is highly curious and instructive.

COMPARATIVE DEGREE (in Grammar.) The second degree, as, better.

COMPASS, or the MARINER'S COMPASS. An instrument used by mariners to point out the course at sea. It consists of a card or fly, on which are drawn the several points of the compass; the needle, or magnetic needle, a small bar of steel, which has the property of turning one of its ends to the north pole; and the box, which contains the card and needle.



COMPASSES, or PAIR OF COMPASSES. A mathematical instrument, consisting of two sharp pointed branches or legs of iron, brass, or steel.

COMPLEMENT (in Astronomy.) The distance of a star from the zenith.

COMPLEMENT (in Military Affairs.) The full establishment of a regiment.

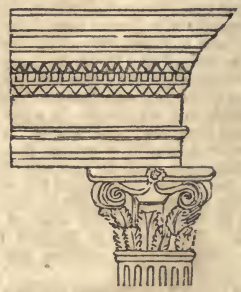
COMPLEMENT OF AN ARC (in Geometry.) What an arc wants of 90° or the quadrant of a circle; thus the complement of 50° is 40°, and the complement of 40° is 50°.

COMPOSING. That branch of the art of printing which consists in arranging the types or letters in such an order as to fit them for the press. The compositor usually stands at a pair of wooden cases, in the divisions of which the different letters are deposited, and he ranges them in a small metal frame, called a composing-stick, with such rapidity, that a page of this work may be composed in two or three hours. The operation is not altogether mechanical, for much intellectual skill, and grammatical knowledge, are requisite in the introduction of proper stops and divisions of words, and in adjusting the lines. The lower case contains the small letters and figures, and the upper one the capitals, &c. The lines are transferred from the composing-stick to a small frame, which lies on the upper case; and are afterwards made up into pages, then into sheets, corrected, and worked off at press.

COMPOSITÆ. One of Linnæus' natural orders, comprehending the plants with compound flowers, as the dandelion, sunflower, &c.

COMPOSITE NUMBERS. Such numbers as some other numbers besides units will measure, as 12, which is measured by 2, 3, 4, and 6.

COMPOSITE ORDER (in Architecture.) One of the five orders of architecture, so called because it is composed of the Ionic and Corinthian orders.



COMPOSITION (in Music.) A piece of music composed according to the rules of art.

COMPOSITION (in Painting.) The putting together the several parts of a picture, so as to set off the whole to the best advantage.

COMPOSITION (in Commerce.) An agreement entered into between an insolvent debtor and his creditor, by which the latter accepts a part of the debt in compensation for the whole.

COMPOST, pronounced COMPO (in Husbandry.) Several sorts of soils or earths and other matters mixed together, in order to make a particularly fine kind of mould.

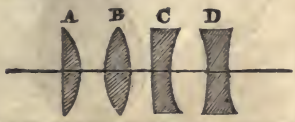
COMPOUND. A term in Botany applied to a flower consisting of several distinct lesser flowers.

COMPOUND INTEREST. Is that interest which arises from principal and interest put together.

COMPOUNDING FELONY, or THEFT BOTE (in LAW.) Where the party robbed takes his goods again of the thief upon an agreement not to prosecute.

COMPOUNDING WITH ONE'S CREDITORS. Where the debtor, not being able to pay all his debts, agrees with his creditors to pay a part.

CONCAVE LENS. This operates differently from the convex lens, the obliquity of the surfaces from the centre being in an entirely different direction: hence, rays of light passing through it, diverge, instead of converging; but it is useful to diminish the too rapid convergency of a convex lens, and therefore serviceable in certain telescopes, and to persons whose crystalline lens in the eye is too convex. A is a plano-convex lens, B a double convex lens, C a plano-concave lens, D a double concave lens.



CONCENTRATION (in Chymistry.) The act of increasing the strength of fluids by volatilizing part of their water.

CONCENTRIC. An epithet for figures having one common centre.

CONCERT. A musical performance in which any number of practical musicians unite in the exercise of their talent.

CONCERTO. A piece of music consisting of several parts that are all to be performed together.

CONCHOLOGY. That branch of natural history which treats of testaceous animals, or such animals as have a permanently testaceous covering, which are comprehended under the testacea in the Linnæan system. A is a trochus, or top-shaped shell; B is a species of whelk. Testaceology is a term synonymous with conchology, but is of later origin and application. All testaceous animals are composed of two parts, one of which, the animal itself, is soft and moluscous; the other is the shell or habitation, which is hard, of a stony or calcareous nature, and either partially or entirely covers the animal. The animal is attached to the shell by means of ligaments or muscles. It was long considered as a matter of dispute among naturalists whether the arrangement of shells should be constituted from the animals or their habitation. There is much difficulty in either plan of proceeding; but the latter is now generally adopted, because it is certain that the best characters upon which to found all systems of natural history, must be those most obvious and accessible. All ranks of animals, as nearly as can be with convenience, should be arranged by apparent and external characters.

A

B

CONCLAVE. The room in the Vatican where the cardinals assemble to choose a pope; also the assembly itself.

CONCORD (in Grammar.) That part of syntax which treats of the agreement of words according to their several inflections.

CONCORD (in Law.) An agreement between parties who intend to levy a fine.

CONCORD (in Music.) The union of two or more sounds in such manner as to render them agreeable.

CONCORDANCE. A sort of dictionary of the Bible, in which every word is given with references to the book, chapter, and verse in which it is to be found.

CONCORDAT. A treaty or public act of agreement between the pope and any prince.

CONCRETION. The growing together of several substances or parts of substances into one body.

CONCRETION (in Surgery.) Morbid concretions are substances formed in the animal body, as the calculus or stone, &c.

CONDENSER. A pneumatic engine or syringe, whereby an uncommon quantity of air may be crowded into a given space.

CONDITION (in Common Law.) A restraint annexed to a thing, so that by the non-performance the party to it shall sustain loss, and by the performance receive advantage.

CONDITION (in Civil Law.) A clause of obligation, stipulated as an article of a treaty or contract.

CONDUCTOR. A name given to those substances which are capable of receiving and transmitting electricity.

CONDUCTORS (in Electricity.) Long metal rods, whose points are so high as may be convenient, above houses, &c. for the purpose of attracting or receiving the electric fluid, and of conducting it into the earth, or into water, thereby to prevent the building being struck by lightning. To effect this, the rod should be detached, and its point should be sharp; by which means the electric fluid will be silently discharged. Dr. Benjamin Franklin was the author of this important invention.

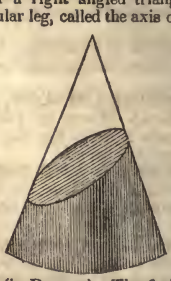
The utility of conductors is universally acknowledged, yet it has not been ascertained, till within these few years, whether pointed or blunt ones were the most proper: the former, however, are now decidedly preferred, in consequence of several experiments made under the inspection of the Royal Society. Instances, nevertheless, occur of houses provided with pointed metallic conductors, being stricken with lightning; so that this philosophical contrivance has not arrived at perfection. Mr. Patterson, of Philadelphia, proposed an improvement in conductors; but the experience of every year convinces us that metallic conductors, or lightning rods, are not certain safegaurds against lightning. Mr. G. C. Morgan, of Norwich, suggested an improvement in them in 1794, which is considered to be essentially useful.

CONDUCTOR OF LIGHTNING. A pointed metallic rod, contrived by Dr. Franklin, to be fixed to the upper parts of buildings, to secure them from the effects of lightning.

CONDUIT. A pipe for the conveyance of water to any particular part.

CONDOR. A large kind of American vulture, measuring with the wings extended, from tip to tip, twelve or sixteen feet. It preys on birds, lambs, kids, or even children.

CONE (in Geometry.) A solid figure, having a circle for its base, and its top terminating in a point or vertex. It is produced by the revolution of a right angled triangle about its perpendicular leg, called the axis of the cone.



CONE (in Botany.) The fruit of several evergreen trees, as the fir, cedar, cypress, so called from its conical shape. It is composed of woody scales, that are usually open, each of which has a seed at the end.

CONE (in Conchology.) A beautiful sort of shell, inhabited by the limax. Shells of this sort mostly bear the highest price of any, one species being valued as high as a hundred pounds.

CONFESSION (in Theology.) A public declaration of one's faith, or the faith of a public body; also, a part of the Liturgy, in which an acknowledgment of guilt is made by the whole congregation. Auricular confession, a private confession or acknowledgment of one's sins made by each individual in the Romish church to his priest or father confes-

sor. It is so called, because it is made by whispering in his ear.

CONFIRMATION. A ceremony in the Episcopal church, by which baptized persons are confirmed in their baptismal vows by the laying on of hands. What is prepared for in catechising is performed by confirmation. This ceremony is performed by the bishop.

CONFLUENCE. The meeting of two rivers, or the place where they meet.

CONFUCIUS, IDOL OF. A Chinese philosopher, who lived 1000 years before Christ, is now worshipped by the Chinese as a demigod; and to impress the ignorant by means of an image, the following monstrous idol is set up.

CONGELATION. The transition of a liquid into a solid state, in consequence of an abstraction of heat: thus metals, oil, water, &c. are said to congeal when they pass from a fluid into a solid state. With regard to fluids, congelation and freezing mean the same thing. Water congeals at 32°; and there are few liquids that will not congeal, if the temperature be brought sufficiently low. Every particular kind of substance requires a different degree of temperature for its congelation, which affords an obvious reason why particular substances remain always fluid, while others remain always solid, according to the vicissitudes of the seasons, and the variety of climates. In consequence of the diminution of temperature, which is experienced as we ascend in the atmosphere, it is evident that in every climate a point of elevation may be reached, where it will be continually freezing. The altitude of the point above the surface of the earth, will depend partly on the temperature of the lower regions of the atmosphere, and partly on the decrement of heat belonging to the column at the period of observation. By tracing a line on the plane of the meridian, through the points at which it constantly freezes, a curve is obtained, which has been denominated the line of perpetual congelation.

CONGER, or CONGER EEL. An eel of an extraordinary size, and extremely voracious, which preys on carcasses, and other fish.

CONGREGATION (in Ecclesiastical affairs.) An assembly of persons who meet together for purposes of divine worship; (in Physics) a term for the least degree of mixture, in which the parts of the mixed body do not touch each other in more than one point.

CONGRESS. An assembly of envoys, commissioners, deputies, &c. from different courts, who meet to agree on matters of general interest; also, an assembly of the deputies from the different states in the republics of America.

CONGREVE ROCKET. An invention so called from the inventor, Sir William Congreve, by which balls and other combustibles are discharged to an immense distance.

CONIC SECTIONS. Curve lines and plane figures produced by the intersection of a plane with a cone. These sections are derived from the different directions in which the solid cone is cut by a plane passing through it; they are the triangle, circle, ellipse, parabola, and hyperbola.

The doctrine of Conic Sections, which is one of the abstrusest branches of geometry, was particularly cultivated by the ancients. Aristeus is said to have composed five books relating to this subject, but they have not been handed down to us. The most ancient treatise extant is that of Apollonius, in eight books, the first four of which are said to have been written by Euclid, and afterwards perfected by Apollonius, with the addition of four other books. Among the moderns, the principal treatises are those of Mydorgius, De la Hire, De l'Hopital, Emerson, Hutton, Vince, and Robertson.

CONIFERÆ. One of Linnæus' natural orders, containing the cone bearing trees.

CONJUGAL RIGHTS, RESTITUTION OF. A species of matrimonial suit, which may be brought either by the husband or the wife, against the party who is guilty of the injury of subtraction or living in a state of separation.

CONJUGATE. An epithet to denote the junction of two lines, as a conjugate axis, that which crosses another axis.

CONJUGATING (in Grammar.) The act of going through the inflections of a verb according to its several moods, tenses, and persons.

CONJUGATION (in Grammar.) The moods, tenses, and persons of a verb, coupled together in regular order.

CONJUNCTION. A term in Astronomy for the meeting of two planets in the same degree of the zodiac, which is marked thus (☌).

CONJUNCTION (in Grammar.) A part of speech which joins words and sentences.

CONNOISSEUR. A person well versed in any art or science.

CONOID (in Geometry.) A figure resembling a cone.

CONQUEROR. In a general sense, one who has gained a battle or any thing by means of fighting; particularly applied to William I. who succeeded to the throne of England after having gained the battle of Hastings.

CONSANGUINITY. Kindred by blood and birth between persons descended from the same common stock.

CONSCIENCE (in Ethics.) A secret testimony of the soul, whereby it gives its approbation to things that are naturally good, and condemns those that are evil.

CONSCIOUSNESS, denotes the immediate knowledge which the mind has of its sensations and thoughts, and, in general, of all its present operations.

CONSCRIPT FATHERS. An appellation for the Roman senators, so called because they were enrolled from the equestrian order into the list of senators.

CONSCRIPTS. Recruits in the French army.

CONSEQUENCE. That which follows from any principle by way of inference; among logicians, the last part or proposition of an argument, in distinction from the antecedents, being something gathered from a preceding argument.

CONSEQUENT (in Geometry.) The latter of two terms of proportion, in distinction from the former, or antecedent.

CONSIGNMENT. The sending or delivering over of goods to another person.

CONSISTORY. An ecclesiastical judicatory.

CONSONANCE (in Music.) An agreement of two sounds.

CONSONANT (in Grammar.) A letter which cannot be sounded by itself without the help of a vowel; in Music, an epithet for that interval which produces consonant concords.

CONSTABLE. A civil officer, anciently of great dignity, as the lord high constable of England, and also the constables or keepers of castles, &c.; now an inferior officer of justice.

CONSTELLATION. An assemblage of fixed stars, imagined to represent the form of some creature or other object, as a bear, a ship, and the like; whence they have derived those appellations which are convenient in describing the stars. The division of the heavens into constellations is very ancient, probably coeval with astronomy itself. Frequent mention is made of them by name in the sacred writings, as in the book of Job and in the prophecy of Amos. Some of the constellations are also mentioned by Homer and Hesiod, who flourished above 900 years before Christ; and Aratus, who lived about 277 years before Christ, professedly treats of all such as were marked out by the ancients, and were afterwards admitted into the Almagest of Ptolemy These were forty-eight in number, called the Old Constellations, to which have since been added others, called New Constellations.

CONSTITUENTS. The two, three, or more varieties of atoms, essential to any substance: in politics, persons who elect a representative or officer, to do any duty.

CONSTITUTION (in Law.) Properly any form of government regularly constituted in a particular sense, the mixed and popular form of government in the United States, consisting of a President, Vice-President, Senators, Representatives, &c.

CONSTITUTION (in Civil Law.) A form of government constituted in any country. In the United States it has a special application to the instruments of civil union in the national and state governments.

CONSTITUTION (in Medicine.) The temperament of the whole body, arising from the quality and proportion of the parts.

CONSUL. A chief magistrate among the Romans, of which there were two that were elected every year.

CONSUMPTION. The wasting and decay of the body by disease.

CONTEMPT (in Law.) A disobedience to the rules, orders, or process of a court.

CONTINENT. The main land, as distinguished from the sea.

CONTORTÆ. One of Linnæus' natural orders, including plants with a single twisted petal.

CONTOUR. The outline of a figure.

CONTRABAND GOODS. Goods prohibited by law to be exported or imported.

CONTRACT. A covenant or agreement between two or more persons with a lawful consideration or cause.

CONTRACTION. In general, the diminishing the extent or dimensions of a body.

CONTRACTION (in Surgery.) The shrinking up of the muscles or arteries.

CONTRACTION (in Grammar.) The reducing two syllables into one.

CONTRACTION (in Arithmetic.) The shortening operations.

CONTRAST (in Painting.) The due

placing the different parts and objects of a figure, that they may be suitably opposed to each other.

CONTRAVALLATION, LINE OF. A line or trench cut round a place by the besiegers, to defend themselves against the sallies of the garrison.

CONTRAVENTION (in Law.) The infringement of a contract.

CONTROLLER (in Law.) An overseer or officer appointed to control or oversee the accounts of other officers.

CONTUMACY (in Law.) A refusal to appear in court when legally summoned.

CONVALESCENCE. That period betwixt the departure of a disease and the recovery of one's health.

CONVENTICLE. A term applied first to the little private meetings of the followers of John Wickliffe, and afterwards to the religious meetings of the Nonconformists.

CONVENTION (in Law.) Any assembly of the states of the realm; in military affairs, an agreement entered into between two bodies of troops opposed to each other.

CONVERGING LINES. Lines which continually approximate.

CONVERGING RAYS (in Optics.) Those rays that issue from divers points of an object, and incline towards one another until they meet.

CONVEX. Curved, or protuberant outwards; as a convex lens, by means of which, light proceeding from its focus is reconverged on the other side, and there makes a picture of the object on the other side.

CONVEYANCE (in Law.) A deed or instrument by which lands, &c. are conveyed or made over to another.

CONVEYANCER. One who follows the business of conveyancing, or drawing up conveyances.

CONVOCATION. An assembly of the clergy, in England, consisting of an upper and lower house, which meet when the parliament meets, to consult on the affairs of the church.

CONVOLVULUS, or BINDWEED. A plant so called because it creeps up and twists itself round whatever is near it. Some few sorts are cultivated in gardens, and bear a beautiful blue flower.

CONVOY. A sea term, for ships of war which accompany merchantmen in time of war, to protect them from the attacks of the enemy; in military affairs, a detachment of troops employed to guard any supply of money, ammunition, &c.

COOK. One who practises the art of cookery. A company of cooks was incorporated in England in the fifteenth century.

COOLER. A vessel used by brewers for cooling the beer after it is drawn off.

COOLY. An East Indian labourer.

COOMB. A measure of grain, containing four bushels.

COOP. A place where fowls are kept confined; also a vessel made of twigs, in which fish are caught, and a barrel or vessel for keeping liquids.

COOPER. An artisan whose business is to form vessels for containing fluids, &c. of staves or sections of wood, bound together by hoops of wood or iron, so as to be rendered air and water tight.

COOT. A water fowl, mostly of a black colour, called also a MOOR HEN. These birds frequent lakes and still rivers, where they make their nests among the rushes, &c. floating on the water, so as to rise and fall with it

COPAL. An American name for all odoriferous gums, but particularly applied to a resinous substance imported from Guinea. It is hard, shining, transparent, and citron coloured.

COPERNICAN SYSTEM. A particular system of the sphere, first proposed by Pythagoras, and afterwards revived by Copernicus, a Polish astronomer. According to this system, the sun is supposed to be placed in the centre, and all the other bodies to revolve round it in a particular order; which notion is now universally adopted, under the name of the Solar System.

COPING. The stone covering on the top of a wall.

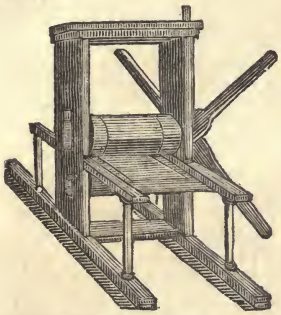
COPPER. A well known metal, orange-coloured, nine times heavier than water, and very elastic; it is next to iron in specific gravity, but lighter than gold, silver, or lead It is one of the six primitive metals.

COPPERAS. A name given to blue, green, and white vitriol: it is a factitious sulphate of iron.

COPPERPLATE. A plate on which figures are engraven; also the impression

which is taken off the plate on paper, by means of printing.

COPPERPLATE PRINTING. The process of taking engravings from copperplates, by means of a rolling press, as in the subjoined cut. The engraved plate is covered with ink, made of oil and lamp-black, then cleanly wiped on the smooth parts, and laid on damp soft paper, and being passed between two cylinders with great force, the impression of the engraved part is perfectly transferred to the paper.



COPPERSMITH. An artisan who works copper into different utensils.

COPPICE, or COPSE. A small wood, consisting of underwood.

COPULA (among Logicians.) The verb that connects any two terms in an affirmative or negative proposition, as, God made the world; made is the copula.

COPULATIVE (in Grammar.) An epithet for such conjunctions as join the sense as well as the words; as, and, or, &c.

COPY (in Law.) The transcript of an original writing.

COPY (among Printers.) The original MS. or the book from which the compositor sets his page.

COPYHOLD (in Law.) A sort of tenure by which, in England, the tenant holds his land by copy of court roll of the manor at the will of the lord.

COPYRIGHT (in Law.) The exclusive right of printing and publishing copies of any literary performance, which is now confirmed by statute, to authors or their publishers, for a certain number of years, that is to say, for fourteen years, and by improvements, and renewals of the copy-right, rendered perpetual; besides, as an action lies to recover damages for pirating the new corrections and additions to an old work, publishers may acquire almost a perpetual interest in a work by republishing it with additions and annotations.

CORAL. A hard, brittle, calcareous substance, which was formerly supposed to be of a vegetable nature, but is now found to be composed of a congeries of animals, endued with the faculty of moving spontaneously. They are distinguished by the form of their branches, and are found in the ocean, adhering to stones, bones, shells, &c. The islands in the South Sea are mostly coral rocks covered with earth. The coral fishery is particularly followed in the Mediterranean, on the coast of France, where the red coral most abounds. Broken branches of coral have been seen to attach themselves to other branches, and thus continue to grow. The three varieties are red, white, and black.

CORBEL. A shoulder piece jutting out in walls to bear up a post.

CORCLE, or CORCULUM (in Botany.) The essence of the seed, or the rudiment of the future plant.

CORD OF WOOD. A parcel of firewood, four feet broad, four feet high, and eight feet long.

CORDELIERS. An order of monks, so called because they wear a cord full of knots about their middle.

CORDOVAN. A sort of leather made of goat skin at Cordova in Spain.

CORINTHIAN ORDER (in Architecture.) The noblest and richest of the five

orders, so called because columns were first made of that proportion at Corinth. Its cap-

ital is adorned with two rows of leaves, between which arise little stalks or caulicoles, forming sixteen volutes.

CORK TREE. A glandiferous tree which flourishes in the south of Europe, the bark of which, when stript, grows again; and if not stript, sheds itself. It is one fourth the weight of water, and therefore, as a cubic foot of water weighs 1000 ounces, a cubic foot of the bark of the cork tree will in water sustain 750 ounces, and smaller weights in proportion.

CORMORANT, or CORVORANT. An exceedingly voracious bird of the pelican tribe. It is about the size of a goose, and eats to such excess, that it is easily caught by nets, and trained by the Chinese to catch fish, which it is prevented swallowing by a ring put about its neck. It builds on the highest cliffs hanging over the sea.

CORN, INDIAN. In the United States, two kinds of Indian corn, or maize, are commonly cultivated. The gourd seed corn, and the yellow corn. Corn in England is the general term for all kinds of grain, but in the United States, by corn, is always meant Indian Corn. The uses to which this invaluable plant is applied in the United States are well known. The articles of diet into which it enters as a component part, are various and important. Alone, it is served up in several forms, all of which are excellent. As a strong nourishing food for horses and swine, it is probably superior to any other grain.

CORNEA. One of the coats of the eye, which is transparent in the fore part, to admit the rays of light.

CORNELIAN. A precious stone, of a flesh colour.

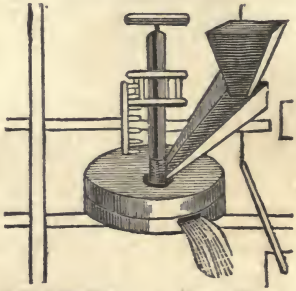
CORNET (in Military Affairs.) An instrument very similar to a trumpet, which is used in the army; also a commissioned officer in a troop of horse or dragoons.

CORNFLAG. A plant having a double tuberose root, with leaves like the fleur de lis, and a flower consisting of one petal, shaped like the lily.

CORNICE. Any moulded projection that crowns or finishes the part to which it is affixed, as the cornice of a room, a door, &c.

CORNISH CHOUGH. A sort of crow, of a fine blue or purple black colour, with red beak and legs. It was reckoned the finest bird of its kind, and therefore borne in coats of arms.

CORN-MILL. A combination of machinery for pulverizing wheat into flour; worked by wind, water, or steam. The wheat is put into the hopper, whence it runs between the stones, while these are turned by a combination of wheels.



CORNUCOPIA, or THE HORN OF PLENTY. Fabled to be the horn which Hercules broke off from Achelous' head. It was filled by the nymphs with all manner of flowers and fruits, and made the emblem of abundance.

COROLLA. The leafy parts of a flower which is marked with divers colours. Each leaf or division of the corolla is called a petal.

COROLLARY. A consequence drawn from some proposition already proved or demonstrated.

CORONARIÆ. One of Linnæus' natural orders of plants, containing those of the libaceous tribe, which are most fitted for making garlands.

CORONATION. The act or solemnity of crowning a king; also the ceremony of investing the pope with his sacerdotal ensigns and dignity.

CORONER. An officer whose particular duty it is to make inquisition into the untimely death of any person.

CORONET (in Heraldry.) A small crown worn by the nobility.

CORONET, or CORNET (in Farriery.) The upper part of a horse's hoof.

CORPORAL (in Law.) An epithet for any thing that belongs to the body, as corporal punishment, in distinction from a fine; a corporal oath, so called because the party taking it is obliged to lay his hand on the Bible.

CORPORAL (in Military Affairs.) A rank and file man, with superior pay to a

common soldier, and with nominal rank under a serjeant.

CORPORATION. A body politic or incorporate, so called because the persons composing it are made into one body.

CORPS. A French term for any body of forces forming the division of a grand army.

CORRECTION (in Printing.) The correcting of proof sheets as they come from the compositor's hands, in order to free them from all faults.

CORRECTIVES. Medicines which serve to correct the qualities of other medicines.

CORRECTOR. The person appointed in a printing office to correct the proofs as they come rough from the compositor's hands.

CORRIDOR (in Fortification.) A covert way round a fortress; in Architecture, a long gallery leading to several chambers.

CORROSIVES. Saline menstruums, which have the property of dissolving bodies, as burnt alum, white vitriol.

CORROSIVE SUBLIMATE OF MERCURY. An oxymuriate of mercury, and an extremely acrid and poisonous preparation.

CORRUPTION OF BLOOD. An infection growing to the blood, estate, and issue of a man attainted of treason.

CORSAIR. A pirate or sea robber, particularly on the coast of Barbary.

CORSLET. An ancient piece of armour with which the body was protected.

CORTES. The states or the assembly of the states of Spain and Portugal.

CORTEX. The outer bark of a plant.

CORUNDUM. A mineral of the sapphire kind, which is found in the East Indies, especially in Pegu and the island of Ceylon.

CORUSCATION. A gleam of light issuing from any thing, particularly that which is produced by the electrical fluid.

CORVUS (in Astronomy.) A constellation in the southern hemisphere.

CORYDALES. One of Linnæus' natural orders of plants, containing those which have helmet-shaped flowers.

CORYMB (in Botany.) A mode of flowering, in which the lesser flower stalks are produced along the common stalk on both sides, rising to the same height.

CO-SECANT (in Geometry.) The secant of an arc, which is the complement of another arc to ninety degrees.

COSMETICS. Preparations which whiten and soften the skin.

COSMOGRAPHY. The science of describing the several parts of the visible world.

COSMOPOLITE. A citizen of the world.

COSSACKS. Irregular troops attached to the Russian army; a predatory tribe which inhabit the banks of the Nieper and Don.

COSTS OF SUIT. The expenses attending a law suit which are in part recoverable from the party who loses the cause.

COTOPAXI. A mountain of the Andes, 20,000 feet high, covered with snow, but a perpetual volcano, often very destructive.

COTTON. A sort of wool or flax, which encompasses the seed of a shrub that is much cultivated in the Indies and in the United States. The fabric or cloth which is manufactured from this wool, when spun, is also called cotton. This article is manufactured in the United States, to such an extent as nearly to preclude the necessity of importation.

COTTONGRASS. A perennial of the grass tribe, so called because its seeds have a downy substance attached to them which resembles cotton, and has been used in its stead.

COTTONTHISTLE. An herbaceous plant, with a biennial root, which is so called because it has downy leaves.

COTYLEDONS (in Botany.) The lobes of the seed, of which there are mostly two. They are destined to nourish the heart of the seed.

COUCH. A seat, or small moveable bed to lie on.

COUCH (in Husbandry.) A layer or heap of malt or barley.

COUCH (in Painting.) The ground or basis on which the colour lies.

COUCHGRASS. A noxious weed, which spreads very fast in arable land, and chokes every thing else that is sown.

COUCHING (in Surgery.) The removing the opaque lens out of the axis of vision, so as to restore the sight.

COVENANT (in Law.) An agreement or consent of two or more by deed or writing.

COVERT. A thicket or shady place for deer or other animals.

COVERT-WAY (in Fortification.) A space of ground level with the field on the edge of the ditch ranging quite round the works.

COVERTURE (in Law.) The state of a married woman who is under the power and protection of her husband, whence she is called a feme covert.

COVING (in Architecture.) The projection in houses beyond the ground plot.

COUNCIL (in Law.) An assembly of the different members of any government who meet to consult about affairs.

COUNCIL (in Ecclesiastical Affairs.) The same as the synod.

COUNCIL OF WAR (in Military Affairs.) An assembly of the chief officers in the army or navy, called by the general or admiral in particular emergencies, to concert measures for their conduct.

COUNTERFEIT. A fraudulent imitation of any thing, made so as to pass for genuine, as counterfeit coin.

COUNTERMINE. A mine made by the besieged, in order to blow up the mine of the besiegers.

COUNTERSCARP (in Fortification.) That side of the ditch which is next the camp, and faces the body of the place.

COUNTER-TENOR (in Music.) One of the middle parts, so called because it is as it were opposed to the tenor.

COUNTINGHOUSE. An office in which a merchant transacts his business.

COUNTRY DANCE (in Music.) A lively pointed air calculated for dancing.

COUNTY. Any certain portion of country into which a state or empire may be divided.

COUP DE MAIN. A sudden unpremeditated attack.

COUP D'ŒIL. The first glance of the eye, with which it surveys any object at large.

COUP DE SOLEIL. Any disorder suddenly produced by the violent scorching of the sun.

COUPLE. A band with which dogs are tied together.

COUPLE-CLOSE (in Heraldry.) An ordinary, so termed from its enclosing the chevron by couples, being always borne in pairs, one on each side a chevron.

COUPLES (in Building.) Rafters framed together in pairs with a tie.

COUPLET. The division of a hymn, ode, or song, wherein an equal number or an equal measure of verses is found in each part.

COURANT. An epithet for any beast represented in an escutcheon in a running attitude.

COURSE. A sea term, for that point of the horizon or compass for which a ship steers.

COURSE (in Masonry.) A continued range of bricks or stones of the same height.

COURSE OF EXCHANGE (in Commerce.) The current price or rate at which the coin of one country is exchanged for that of another; which, as it depends upon the balance of trade and the political relations which subsist between the two countries, is always fluctuating.

COURSER. A race horse.

COURSING. The pursuing of any beast of chase, as the hare, &c. with greyhounds.

COURT (in Law.) The place where justice is judicially administered.

COURTS OF CONSCIENCE. Courts for the recovery of small debts.

COVY. An assemblage of wild fowl, particularly partridges.

COW. The female of neat cattle, and one of the most useful of domestic animals, which supplies milk, butter, and cheese. The engraving represents some of them in their favourite summer position, in water, to which they retire to escape from the attacks of insects. There are numerous breeds, but the Holderness and Alderney are preferred in South Britain, and the Ayrshire, represented in the engraving, is the most esteemed in North Britain.

COW-POX. A pustule which, when transferred from the udder of a cow to the human body, exhausts or neutralizes some morbid action of the rete mucosum, and prevents a disease of the same membrane, called variola, or small pox.

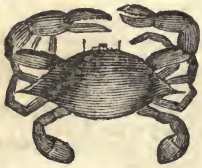
COWRY. A testaceous animal which is said to have the power of leaving its shell and

forming a new one. These animals live in sand at the bottom of the sea. The shell is used as a coin in India.

COWSLIP. A plant which grows wild in the meadows; and bears a pretty yellow flower.

CR. An abbreviation for creditor.

CRAB. A sort of shell-fish, which every year cast off their old shells. There are 204 species, which in general have eight legs, besides two large claws. The most remarkable are the violet crabs of the Bahamas, which live in the mountains, but once a year proceed to the sea in a body of many millions, a journey which employs them some weeks. Here they cast their spawn, and soon after millions of young crabs travel into the mountains. Crabs are often used as food, and in a merciless manner put to death in boiling water. Shrimps, prawns, and lobsters, are of the same genus.



CRAB (in Astronomy.) Cancer, one of the signs of the zodiac.

CRAB (in Botany.) A wild apple tree, and also the fruit of that tree.

CRAB (among Shipwrights.) An engine with three claws for launching of ships.

CRAB'S EYE. A stone found in the craw fish, resembling an eye.

CRAB-TREE, or Pyrus malus, L. is an indigenous plant, growing in woods and hedges; it flourishes better on declivities and in shady places, than in open, exposed situations, or on boggy soils. Its blossoms are white, and appear in the month of May.

CRADLE (with Surgeons.) A wooden machine to lay a broken leg in after it has been set.

CRADLE (with Shipwrights.) A frame of timber raised on each side of a ship, for the more convenient launching of her.

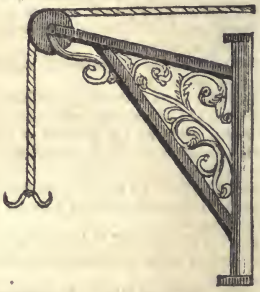
CRAMP. A spasmodic affection, which causes a violent distortion of the muscles, nerves, &c.; also, a disease to which hawks are subject in their wings.

CRAMP IRONS. Irons which fasten stones in buildings.

CRANBERRY. A pale red berry of a tart taste, the fruit of the cranberry tree.

CRANE. A species of heron, with long, straight, sharp bills, and feet with four toes, of which there are 96 species. The common crane, or ardea grus has black wingfeathers, with an ash-coloured body, and flies in great flocks in many countries. The Siberian crane is noted for its sagacity, and the flocks keep a sentinel to warn them of danger.

CRANE. A simple contrivance, by which a pulley is projected so as to be perpendicular to the weight intended to be raised.



CRANESBILL. The English name for the geranium.

CRANIOLOGY. The science which professes to discover men's faculties and characters from the external appearances of the skull.

CRANIUM. The skull, or superior part of the head.

CRANK. A machine resembling an elbow, projecting from an axis or spindle, which by its rotation serves to raise or lower the pistons of engines for raising water; also, a piece of brass work of a similar shape, on which the bell wire is fixed, so as to move the bell.

CRAPE. A light transparent stuff, resembling gauze.

CRATE. A large case made of open bars, in which earthen ware is packed.

CRATER. The mouth of a volcano, from which the fire issues.

CRAY FISH, or CRAW FISH. A small sort of lobster.

CRAYON. A small pencil of any sort of colouring stuff, made into a paste and dried.

CREAM OF TARTAR. The common

white tartar freed from its impurities; a salt prepared from the lees of wine.

CREDIT (in Commerce.) A mutual loan of merchandises, &c. Letters of Credit, letters given by merchants to persons whom they can trust to draw money from their correspondents.

CREED. A summary of the principal articles of the Christian faith; as the Apostles Creed, the Athanasian Creed, &c.

CREOLE. A descendant of black and white parents.

CREPITATION. The crackling noise made by some salts during the process of calcination.

CRESCENT. The state of the moon when in her increase; in Heraldry, an honourable ordinary, or a mark of distinction for the second sons of families, or those descended from him.

CRESS. A garden salad.

CREW. The company of sailors belonging to a vessel.

CRICKET. A little insect that haunts stoves and ovens.

CRIMES. Offences against morals, as far as they are prohibited by law.

CRITICISM. An art which discriminates the merit or demerit of any production, but is often much abused.

CRISIS. That stage of a disorder from which some judgment may be formed of its termination.

CROCODILE. An amphibious animal, and the largest of the lizard tribe, which inhabits the Nile and the Indian Sea. It is covered with hard scales, that cannot easily be pierced, except under its belly.

CROCUS. A bulbous plant, that flowers very early in spring.

CROP. The craw of a bird; also, the produce of what is sown in a field.

CROSS. An instrument of cruel punishment among the Romans, &c. to which culprits were nailed by the hands and feet, and suspended for a time, or till dead; among the Catholics it is a religious emblem; and in the southern hemisphere it is a small constellation of five stars, which discriminates the south pole.

CROSS (in Heraldry.) The most ancient and the noblest of all the honourable ordinaries, formed by the meeting of two perpendicular with two horizontal lines, so as to make four right angles in the figure of a cross; such is the cross batonne in the subjoined figure.

CROSS. The name given to the right side of a coin, in distinction from the pile or reverse.

CROSS (in Architecture.) Any building which is in the figure of a cross.

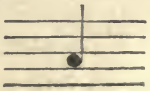
CROSS, ELEVATION OF. A ceremony of the priests of the Romish church during mass, as exhibited in the engraving.

CROSSBILL. A sort of Grosbeak, a bird so called because the mandibles of its beak cross each other.

CROSS BOW. A kind of bow formerly much used, which was strung and set in a shaft of wood, with a trigger, &c.

CROSS-EXAMINATION (in Law.) A close and rigid examination on the part of the adversary, consisting of cross questions, in order to elicit the truth.

CROTCHET (in Music.) Half a minim, marked thus:



CROTCHET (in Printing.) Marked thus [ ], to separate what is not the necessary part of a sentence.

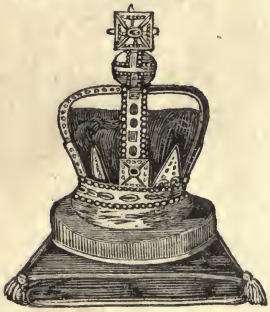
CROUP. The hindmost part of a horse. Also, a disease of the throat, commonly called Hives.

CROUPER. A leathern strap fitted to go under the tail of a horse, to keep the saddle in its place.

CROW. A sociable noisy bird, of a jet black colour, that feeds partly on carrion.

CROW (among Mechanics.) An iron instrument that is used as a lever for raising weights.

CROWN. A cap of state worn by sovereign princes. The crown of England is called St. Edward's crown, because it is made in imitation of the ancient crown supposed to have been worn by that monarch. That now in use was made at the Restoration, for the coronation of Charles the Second.



CROWN. A coin, in value five shillings, so called from the figure of the crown which was originally given upon it.

CROWN (in Anatomy.) The vertex or highest part of the head.

CROWN (in Architecture.) The uppermost member of a cornice.

CROWN (among Jewellers.) The upper work of the rose diamond.

CROWN-GLASS. The finest sort of window glass.

CROWN-IMPERIAL. A well known beautiful flower, the root of which is perennial.

CROZIER. A shepherd's crook; also a bishop's staff, which is of a similar form, and an emblem of his pastoral office.

CRUCIBLE. A melting pot used by chymists for the melting metal and minerals.

CRUCIFIX. A figure either in statuary or painting, representing our Saviour on the cross.

CRUCIFIXION. The act of nailing or fixing to a cross; the suffering of being crucified.

CRUISE. A voyage or expedition in quest of an enemy's vessels.

CRUOR. Coagulated blood.

CRUSADES. The expeditions undertaken by the princes of Christendom for the conquest of the Holy Land, in the twelfth and three following centuries. On these occasions every soldier bore a crucifix on his breast, as an emblem of spiritual warfare.

CRUSTACEOUS SHELL FISHES. Fishes covered with shells which are made up of several pieces and joints; such as crabs, lobsters, crayfish, &c. in distinction from the testaceous fish, as oysters.

CRYPTOGAMIA. One of the classes of plants in the Linnæan system, comprehending those whose fructification or flower is too concealed or minute to be observed by the naked eye, as the mosses, the algæ or seaweeds, the ferns, and the fungi or funguses.

CRYPTS. Subterraneous places where the martyrs were buried, and the primitive Christians performed their devotions; also underground chapels, such as the crypt under St. Paul's church in England.

CRYSTAL, or **Rock Crystal** (in Mineralogy.) A transparent stone as clear as glass. It is found in Iceland, Germany, and France, and belongs to the quartz or siliceous genus; also a factitious body cast in the glass-houses, called crystal glass, which is very brittle, and burns with little or no flame.

CRYSTAL (in Chymistry.) That part of a salt which assumes a regular and solid form, on the gradual cooling of its solution.

CRYSTALLINE HUMOUR. A pellucid humour of the eye, so called from its transparency like crystal.

CRYSTALLIZATION. The reducing of any salt into a regular form by dissolving it in a menstruum, and allowing it to cool until it shoots into the bodies called crystals. The forms thus generated are extremely various, very regular, and highly beautiful. Aqueous gas, when frozen, as snow, exhibits beautiful specimens of crystalized forms, when examined with the microscope; and freezing water is another specimen of crystallization.

CUB. The young of some particular beasts, as of a fox and a bear.

CUBE (in Geometry.) A regular solid body, supposed to be generated by the motion of a square plane along a line equal and perpendicular to one of its sides. It is enclosed by six equal sides or faces, which are square. A die is a small cube.

CUBE (in Arithmetic.) The third power of any number, produced by multiplying the number into itself, and then again into the product, as $3 \times 3 = 9 \times 3 = 27$, the cube.

CUBE ROOT. The side of a cube number; thus 3 is the cube root of 27.

CUBIT. A measure equal to about 1 foot 9 inches.

CUCKOO. A bird which is heard about the middle of April, and ceases to sing at the end of July. There are 46 species; the common English bird weighing about five ounces; the bill is black, and the feathers a dove colour. It arrives in spring, and departs in July. It lays eggs in the nests of other birds, chiefly in that of the hedge-sparrow, from which the young cuckoos turn out the young sparrows.

CUCKOO-SPITTLE. A white froth or spume very common on the lavender and other plants in the spring, which forms the nidus of a sort of cicada.

CUCURBITACEÆ. One of Linnæus' natural orders of plants, comprehending those which resemble the gourd, as the cucumber, the melon, &c.

CUIRASS. A metal breast-plate.

CULM (in Botany.) The stalk or stem of corn or grasses.

CULM (among Miners.) A sort of coal in Wales.

CULMINEÆ. One of the Linnæan natural orders of plants, consisting of the grasses.

CULPRIT (in Law.) A word of form, applied in court to one who is indicted for a criminal offence. It is as much as to say, in French, 'culpable prit, found or considered guilty.'

CUMMIN SEED. A long, slender seed, of a rough texture, unctuous when bruised, of a strong smell, and an acrid taste.

CUP, ELEVATION OF. A ceremony of the popish mass, in which the priest, with reverence, exhibits the cup which is used for the sacred wine.

CUPBEARER. An officer of a king's household, formerly an attendant at a feast.

CUPEL. A chymical vessel made of earth, ashes, or burnt bone, in which assay-masters try metals.

CUPOLA. A roof or vault rising in a circular form, otherwise called the Tholus or Dome, as the cupola of St. Paul's Cathedral, London, here represented.

CUPPING (in Surgery.) The operation of applying the cupping-glass to the fleshy parts of the body, for the purpose of drawing away corrupt blood or humours.

CURATE. Properly, one who has the cure of souls; now applied to one who officiates for hire in the place of the incumbent.

CURB OF A BRIDLE. A chain of iron that runs over the horse's beard.

CURFEW. Literally, cover feu or fire; a law introduced from Normandy into England by William the Conqueror, that all people should put out their fire and lights at the ringing of the eight o'clock bell.

CURLEW. A water fowl of a gray colour, with a large beak.

CURRANT. The fruit of a shrub having no prickles; the leaves of this plant are large, and the fruit, which is either black, red, or white, is highly esteemed; also, a dried fruit that comes from the Levant.

CURRENCY (in Law.) Paper money issued by authority, and passing current instead of coin; also, in general, any sort of money that passes current by authority, as the metallic currency, signifying the coin of the realm.

CURRENTS. Impetuous streams.

CURRIER. A dresser of tanned leather, to make it pliable and fit for use.

CURRY. A mixture of turmeric, coriander seed, ginger, and cayenne pepper.

CURRY-COMB. An iron sort of comb for the dressing of horses.

CURSITOR. An officer in chancery, who makes out original writs for any particular county.

CURTAIN (in Fortification.) The front of a wall or fortified place lying between two bastions.

CURVE. A line whose parts incline different ways.

CUSP. Properly, the point of a spear.

CUSP (in Astronomy.) A term for the horns of the moon.

CUSTOM (in Law.) A duty on the importation or exportation of goods.

CUSTOS ROTULORUM, or KEEPER OF THE ROLLS. He that has the keeping of the records of the sessions of the peace.

CUTLER. A maker and seller of knives and all cutting instruments.

CUTTER. A kind of boat attached to a vessel of war, which is rowed with six oars, and is employed in carrying light stores, passengers, &c.

CUTTLE-FISH. A sea fish furnished with many suckers and holders for securing its prey. It emits a black fluid, which is used in making Indian ink.

CYANOGEN (in Chymistry.) Carbon combined with azote.

CYBELE (in Heathen Mythology.) The daughter of Cœlus and Terra, wife of Saturn, and mother of the gods; she is always represented with a turreted head, and accompanied with a lion.

CYCLE. A continual revolution of numbers, as applied to a series of years which go on from first to last, and then return to the same order again.

CYCLOID. A curve generated by the rotation of a circle along a line.

CYCLOPÆDIA. See ENCYCLOPÆDIA.

CYLINDER. A figure conceived to be generated by the rotation of a rectangle about the side. An oblong circular solid.

CYLINDER (in Gunnery.) The whole hollow length of a great gun; the bore.

CYME. Properly, a sprout or shoot; also, a sort of flowering, where the florets do not all rise from the same point.

CYMOSÆ. One of Linnæus' natural orders, comprehending such plants as are disposed in the form of a cyme.

CYPRESS. A tree very celebrated among the ancients, by whom it was accounted the emblem of death, and used in adorning their sepulchres. The leaves of the cypress are squamose and flat; the fruit is composed of woody tubercles, and the wood of the tree is always green.

D.

D, as a numeral, denotes 500: as an abbreviation, stands for Doctor, Domini, &c.; as a sign, is one of the Dominical or Sunday letters; and in Music, the nominal of the second note in the natural diatonic scale.

DAB. A flat fish, thinner and less than the flounder.

DACE. A river fish of the carp kind.

DACTYL. A foot or division in a poetical line, consisting of one long and two short syllables.

DADO. The die, or that part in the middle of the pedestal of a column between its base and cornice.

DÆMON. A spirit either good or bad, among the heathens; the devil, or an evil spirit, among Christians.

DÆMONIAC. One possessed with a devil.

DAGON. An idol of the Philistines, of the human shape upwards, and resembling a fish downwards, with a finny tail.

DAIRY. In rural affairs, a place appointed for the management of milk, and the making of butter, cheese, &c. Dairy houses are to be kept perfectly clean; and lattices are to be preferred to windows; and if their situation can be fixed beside a spring or current of water, it is to be preferred. The proper receptacles for milk, are earthen pans, or wooden vats.

DAMAGES (in Common Law.) The hurt or hinderance which a man receives in his estate, particularly those which are to be inquired of by the jurors, when an action passes for the plaintiff.

DAMASCENE, pronounced DAMSIN. A fruit tree, yielding a small black plum, of an oval shape, so called from Damascus, of which it is a native.

DAMASK. A silk stuff with a raised pattern, consisting of figures and flowers.

DAMASK-ROSE. A fine sort of rose, of a red colour.

DAMPS. Noxious exhalations in mines which sometimes suffocate those that work in them.

DAMSIN. See DAMASCENE.

DANCE, or DANCING, as at present practised, may be defined "an agreeable motion of the body, adjusted by art, to the measures or tune of instruments;" but, according to what some reckon more agreeable to the true genius of the art, dancing is "the art of expressing the sentiments of the mind, or the passions, by measured steps or bounds that are made in cadence, by regulated motions of the body, and by graceful gestures; all performed to the sound of musical instruments or of the voice."

DANE. A native of Denmark, a kingdom in Europe situate at the entrance to the Baltic sea, comprising the peninsula of Jutland, and the islands of Zealand and Funen. It is in general a level and fertile country, well situated for trade. The inhabitants are hospitable, moral, industrious, and intelligent. Copenhagen is the capital, containing about 100,000 inhabitants.

DAPPLE. Light gray with spots; the colour of a horse.

DATA (in Geometry.) Things given or taken for granted, as known or true.

DATE. That part of a writing or letter which expresses the day of the month and year.

DATE-TREE. A species of palm, native of Tunis and other parts of Africa, which grows to a great height, and yields a fruit formerly much used in medicine.

DATIVE (in Grammar.) The third of Greek and Latin nouns.

DAUPHIN. The title of the next heir to the crown of France.

DAWN. The commencement of the day, when the twilight appears.

DAY. The time in which the sun enlightens a place, and the period from the sun's passage of the meridian or southing, till the return, which averages 24 hours, but owing to the obliquity of the meridian to the ecliptic, and to the elliptical form of the earth's orbit, constantly varying. There are three ways of reckoning the day. Civil time begins the day from 12 o'clock at night, and noon is its middle, distinguished before by A. M. and after, by P. M. The astronomical day commences at the noon of the civil day, and reckons round to the following noon; and the nautical day ends at the instant the astronomical day begins, so that nautical time in days of the month, is always 24 hours in advance of astronomical time, and the civil day is midway between both.

DAY (in Law.) The civil day, including day and night; also the day of appearance of the parties in court.

DAY-FLY. A kind of insect, so called because it lives only a day.

DAY-RULE (in Law.) An order of court, permitting a prisoner in custody in the King's Bench prison, &c. to go for one day without the bounds of the prison.

DAYS OF GRACE (in Commerce.) A customary number of days allowed for the payment of a bill of exchange, &c. after the same becomes due.

D. D. Doctor of Divinity.

DEACON. A minister or servant in the church, whose office it is to assist the priest.

DEAD-EYE. A sea term for a sort of flat block.

DEAD LANGUAGES. Those languages which have ceased to be spoken by any nation, as the Greek and Latin.

DEAD NETTLE. A sort of nettle without stings.

DEAD RECKONING. The account kept of a ship's course by the log, without any observation of the sun, moon, or stars.

DEAF AND DUMB. Those who have the misfortune to be born without the faculties of hearing or speaking. Means have been successfully employed to supply these defects in charitable institutions for the benefit of these unhappy objects, where the young are taught to communicate their thoughts by the help of signs, particularly by the language of the fingers, which, though before but a childish amusement, is now turned to a useful purpose.

DEAL. The wood of the fir tree cut up for building.

DEAN. A dignitary of the church of England, next to a bishop, and head of the chapter, in a cathedral or council.

DEATHWATCH. A little insect inhabiting old wooden furniture, which makes a ticking noise in such a manner, by a certain number of distinct strokes, as formerly to be considered ominous to the family where it was heard. This circumstance gave rise to its vulgar name.

DEBENTURE (in Law.) A sort of bill drawn upon the Government. Custom House debentures entitle the bearer to receive a drawback on the exportation of goods, which were before imported.

DEBIT. A term used in book-keeping to express the left-hand page of the ledger, to which all articles are carried that are charged to an account.

DEBT (in Commerce.) A sum of money due from one person to another.

DEBT (in Law.) An action which lieth where a man oweth another a certain sum of money.

DEC. An abbreviation for December.

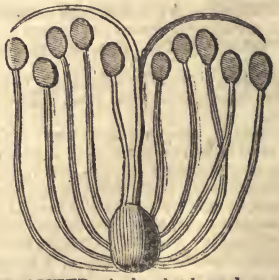
DECADE. The number or space of ten days, which formed the third part of the Attic month; also the number of ten books, which was formerly the division of some volumes, as the Decades of Livy.

DECAGON. A plane geometrical figure, consisting of ten sides and ten angles.

DECALOGUE. The ten commandments delivered by God from Mount Sinai to Moses. They were engraved by God on two tables of stone. The Jews, by way of eminence, call these commandments the ten words, from whence they had afterwards the name of *decalogue;* but they joined the first and second into one, and divided the last into two.

DECAMERON. A volume of ten books, such as the Decameron or novels of Boccacio.

DECANDRIA. One of the artificial classes of Linnæus, comprehending those plants which have ten stamens in the flower.



DECANTER. A glass bottle made so as to hold the wine which is for immediate use.

DECEMBER. The last month of the modern year, winter in the northern, and summer in the southern hemisphere.

DECEMVIRS. Extraordinary magistrates among the Romans, chosen for the particular purpose of collecting the laws of the twelve ta-

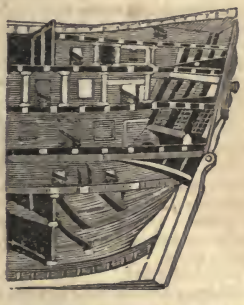
bles, which they gathered from the writings of Solon.

DECIDUOUS PLANTS. Plants which cast their leaves in winter.

DECIMAL. An epithet for what consists of the number of ten; as, Decimal Arithmetic, a mode of computation that proceeds on the scale of ten figures; Decimal Fractions, such as have 10,100,1000, &c. for their denominator, and marked with a point thus .5 for five tenths.

DECIMATION. A military punishment among the Romans, inflicted on every tenth man of the company who had behaved themselves ill.

DECK. The floor of a ship, from stem to stern; half-deck, from the main-mast to the stern; and quarter-deck, that over the cabin and steerage to the stern. The engraving represents the successive decks of a large ship of war.



DECLARATION (in Law.) A statement of the cause of action by a plaintiff against a defendant.

DECLENSION. The different inflexions of nouns throughout their cases.

DECLINATION. The distance of any star or point of the heavens from the equator, either north or south. The greatest declination is 23 degrees and a half.

DECOCTION. A medicinal liquor, or diet-drink, made of roots, herbs, &c. boiled.

DECOMPOSITION (in Chymistry.) The separation of the elementary particles of bodies, which naturally and necessarily combine, according to certain fixed laws.

DECORATIONS. Any ornaments or embellishments, such as prints to a book, or the mouldings and other carved works in buildings.

DECOY. A sea term for a stratagem employed by ships of war, to draw any vessel of inferior force into an incautious pursuit, until she comes within gun shot.

DECOY (among Sportsmen.) A place for catching wild fowl.

DECOY-DUCK. A wild duck trained to decoy others into the decoy or place where they may be caught.

DEED (in Law.) A written contract, signed, sealed, and delivered.

DEEP-SEA-LINE. A sea term for a small line to sound with.

DEER. An animal that is kept in parks, either for ornament or for the chase; the flesh of which is called venison.

DE FACTO. In deed or fact.

DEFALCATION. A falling off or a failure in any public accounts.

DEFAMATION (in Law.) Slanderous words spoken or written against any one.

DEFAULT (in Law.) A nonappearance in court without sufficient cause.

DEFAULTER. One who is deficient in his accounts.

DEFECTION. The falling off from a government or state.

DEFENCE (in Law.) The reply which the defendant makes after the declaration is produced; in Military Affairs, any work that covers or defends the opposite posts, as flanks, parapets.

DEFENDANT (in Law.) One who is sued in an action.

DEFENDER OF THE FAITH. A title given by Pope Leo X. to Henry VIII. of England, for writing against Luther, in behalf of the church of Rome, before he himself quarrelled with the Pope.

DEFILE. A narrow lane or passage through which a company of soldiers can pass only in file.

DEFINITION. The determining the nature of things by words, or explaining the signification of a word.

DEFLAGRATION. The burning off in a crucible any mineral body.

DEFLEXION. The turning of any thing out of its true course.

DEFLUXION (in Surgery.) The falling of a humour in the body from a superior upon an inferior part.

DEGRADATION (in Ecclesiastical Affairs.) The depriving a person of his dignity and degree, as the degradation of a clergyman by depriving him of holy orders.

DEGRADATION (in Military Affairs.) The depriving an officer of his commission.

DEGREE (in Mathematics.) The 360th part of the circumference of a circle, marked thus (°.)

DEGREE (in Law.) An interval of relationship between persons more or less nearly allied.

DEGREES (in a University.) Titles of honour conferred on persons for their merit in the arts and sciences.

DEGREES OF COMPARISON (in Grammar.) The inflexions of adjectives to express different degrees of the same quality.

D. G. An abbreviation for Dei Gratia, By the Grace of God.

DEIST. One who believes in a God, but rejects revelation.

DE JURE. By right.

DELEGATES. Commissioners appointed by a public body to attend to some particular business.

DELETERIOUS. An epithet for drugs or any substances of a destructive and poisonous quality.

DELFT WARE. A kind of potter's ware, originally made at Delft in Holland; it is covered with an enamel or white glazing, in imitation of porcelain.

DELIQUIUM, or DELIQUESCENCE. A spontaneous solution of some salts by exposure to the air; absolving moisture.

DELIVERY, or GAOL DELIVERY (in Law.) A term applied to the sessions of the Court of Common Pleas, &c. by which the gaol is delivered or cleared of prisoners.

DELIVERY (in the Mint.) The quantity of moneys coined within a given period.

DELIVERY (in Oratory.) The manner of pronouncing an address, as regards the voice and utterance of the speaker.

DEMESNE LANDS. Lands which the lord of a manor has in his own hands.

DEMI. A half-fellow at Magdalen College at Oxford, (England;) also, a term in composition signifying half, as, demi-god, a hero who was enrolled among the gods.

DEMOCRACY. A form of government where the supreme power is lodged in the people at large, or in persons chosen by them.

DEMONSTRATION. A proof or chain of arguments serving to prove the truth.

DEMURRER (in Law.) A pause or stop in a suit upon some difficulty.

DEMY. A sort of paper much used in printing.

DENIER. One of the earliest French coins, answering nearly to the English penny.

DENIZEN. An alien who is naturalized.

DENOMINATOR. That part of a fraction which stands below the line, as 10 in the fraction five tenths.

DENOUEMENT. The developement of the plot in a play, or the result of any event.

DE NOVO. Afresh, or from the beginning.

DENSITY. The property of bodies of containing a certain quantity of matter under a certain bulk.

DENTIST. One who draws teeth, and prescribes for their diseases.

DEODAND. A thing as it were forfeited to God, to atone for the violent death of a man by misadventure.

DEPARTURE. The easting or westing of a ship in respect to the meridian it departed from.

DEPHLEGMATION. The depriving any liquid of its superfluous water.

DEPONENT. One who gives information on oath before a magistrate.

DEPORTATION. The banishment of a person among the Romans, to some distant island.

DEPOSITION. The testimony of a witness taken upon oath. Also, the settlement of substances dissolved in fluids.

DEPOT. A place where military stores are deposited.

DEPRESSION. The distance of a star from the horizon below.

DEPRESSION OF THE POLE. Is said of a person sailing from the pole to the equator.

DEPRESSION OF THE VISIBLE HORIZON, or DIP OF THE HORIZON. Its dipping or sinking below the true horizontal plane, by the observer's eye being above the surface of the sea.

DEPUTY. A person appointed by commission to act for another.

DERELICT. Forsaken, left; as derelict lands, lands which the sea has left; derelict ships, vessels left at sea, &c.

DERIVATIVE (in Grammar.) Any word which is derived from another.

DERMESTES. An insect, called in vulgar language the Leather-eater, destructive to the binding of books.

DERNIER. Last, as a tribunal of dernier resort, the last or highest court of appeal.

DERVISE. An order of religious persons who practise great austerities on themselves.

DESCENSION. An arc of the equator which descends or sets with any sign or point in the zodiac. Descension is either right or oblique, according as it takes place in a right or oblique sphere.

DESCENSIONAL DIFFERENCE. The difference between the right and oblique descension of a star, &c.

DESCENT. In general, the tendency of heavy bodies towards the earth.

DESCENT (in Law.) Hereditary succession to an estate.

DESCENT (in Military Affairs.) Landing in a country for the purpose of invasion.

DESCRIPTION. An imperfect kind of definition that includes many accidents and circumstances peculiar to an object, without defining its nature precisely.

DESERTER. A soldier who runs away from his colours, or goes over to the enemy.

DESIDERATUM (in Literature.) What is wanted or inquired after. A work is a desideratum, which, though wanted, is not executed.

DESIGN. The first draught or sketch of any picture.

DESPATCHES. Letters sent to or from a government on public business.

DESPOTISM. A form of government where the monarch rules by his sole and sovereign authority.

DESUNT CÆTERA. The rest wanting; words put at the end of any chasm or

deficiency in an imperfect or mutilated work.

DETACHMENT (in Military Affairs.) A certain number of men selected for a particular expedition or service.

DETAINER. A writ for holding any one in custody.

DETENTS. The stops in clock-work, which, by being lifted up or let down, lock or unlock the clock in striking.

DETERGENTS. Medicines which remove viscid humours.

DETERMINATE PROBLEM. That which has one or a limited number of answers.

DETONATION. The noise and explosion which some substances make upon the application of fire to them, as gunpowder, &c.

DETONATING POWDER, or FULMINATING POWDER. A composition of coal, sulphur, and oxymuriate of potass, which may be inflamed by percussion.

DETRITUS. That which is washed down from the mountains and forms a new soil.

DEUCALION. The son of Prometheus, who with his wife Pyrrha were saved during a deluge, in a ship, on Mount Parnassus.

DEVISE. A gift of lands by last will and testament.

DEW. A vapour which falls at sunset, and during the night, particularly after a hot day; for the heat of the sun having converted all the liquid matter on the earth's surface into aqueous gas, the atmosphere is completely saturated with it, and this is made sensible if a decanter be filled with cold spring water, when the aqueous gas in the air becomes rapidly condensed on the outside of the bottle, even so as to run down it. The same effect which is produced by the cold bottle, is also produced by the departure of the sun, and the consequent coolness of the earth and atmosphere; and every body, particularly all absorbent substances, as linen and cloths, become covered and saturated with the fixing and concentrating aqueous gas, just as in the case of the cold bottle. This is dew.

DEW-BORN. In animal economy, a distemper to which cattle are subject: it is a swelling, or distension of the body, to such a degree that the creatures affected are in danger of bursting. This malady is occasioned by turning them into rank pasture, or feeding them with watery grasses. When they are thus distended, they ought first to be driven, or moved about briskly, and then properly purged and glystered.

DEWLAP. The loose skin that hangs down under the throat of an ox, cow, &c.

DEXTER. The right, or on the right hand or side, as the dexter point; in Heraldry, the right hand side of the escutcheon.

DEY. The supreme governor of Algiers.

DIABETES. A distressing disease, and very difficult of cure. The chief symptom, is a discharge of a very great quantity of limpid sweet urine. The thirst is great, skin parched, tongue white, and moist on its exterior surface, but reddish on the external edges, saliva white, and viscid.

This disease is sometimes attended with fever of the inflammatory kind, in which case the usual remedies will be proper, as small bleedings, and low diet. But in general, it proceeds from a diseased state of the stomach, and of the natural powers of digestion and assimilation. The cure is performed by a regimen, and medicines preventing the formation of sugar, and diminishing the increased action of the stomach.

DIABETES, (in Farriery.) Denotes a profuse staling of horses: it is generally occasioned by too violent exercise, or by overstraining, &c.

DIACOUSTICS. The science of refracted sounds.

DIADELPHIA (in Botany.) One of the Linnæan classes, comprehending such plants as bear hermaphrodite flowers with two sets of united stamens.

DIADEM. A headband or fillet, anciently worn by kings as an emblem of dignity.

DIÆRESIS (in Grammar.) The division of one syllable into two, marked thus (¨).

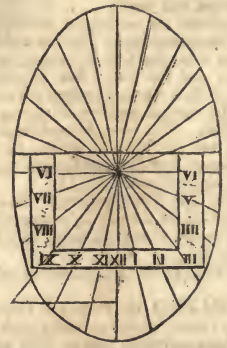
DIAGNOSTIC SIGNS. Signs by which diseases are distinguished from each other.

DIAGONAL. A straight line drawn from one angle of a figure to another.

DIAGRAM. A scheme drawn by way of illustrating any thing.

DIAL. A plate marked with lines, for showing the hour of the day by the shadow of a gnomon, style, or pin, when the sun shines. The diversity of sun-dials arises from the different situation of the plane, and from the different figure of the surfaces upon which they are described. Dials are horizontal or vertical, inclining or reclining, and declining inclining, or declining reclining, with reference to the direction of their faces. Their accurate construction grows out of the art of the projection of the sphere, effected by the scale of sines and tangents, and is a practice both amusing and instructive; and the dialist merely requires as data, the latitude of the place, and the horizontal and meridional

declension and inclination, in degrees, of the situation. The subjoined figure represents an horizontal dial.



DIALECT. A manner of speech peculiar to any parts of a country. The dialects of Greece were admitted to form a part of their language, as the Attic dialect, spoken by the Athenians; so the Ionic, Poetic, Æolic, and Doric dialects.

DIALECTICS. The art of logic.

DIALOGUE. A written discourse between two or more persons.

DIALYSIS. A mark or character, consisting of two points placed over two vowels, as poemata, to show that they must be sounded distinctly.

DIAMETER. A line which divides a curvilinear surface into equal parts. The diameter of a circle is to the circumference, as 7 to 22. The square of the diameter multiplied by .7854 is the area. The cube of the diameter multiplied by .5236, is the solid contents of a sphere.

DIAMOND. A precious stone, the hardest of all bodies, most brilliant, and most valuable. Diamonds are found in Brazil, in Golconda, and Borneo. They consist of pure carbon, with a specific gravity of 3·5; and the hardest tools making no impression on them, they are cut and ground by the powder of their own substance. The goodness of a diamond consists in three things: its lustre or water, its weight or bigness, and its hardness. Its weight is estimated by carats of four grains each. Some diamonds are of an extraordinary size, and are valued at immense prices; the largest ever known belonging to the king of Portugal, weighs 1680 carats, and is valued, although uncut, at 224,000,000*l.* sterling; that in the sceptre of the emperor of Russia weighs 779 carats, and is valued at upwards of 4,000,000*l.* but was bought by the empress Catharine for about 135,000*l.* The Pitt Diamond, which at that time was one of the largest, weighed 136 carats, and cost Louis XIV. 130,000*l.* The engraving represents a shed erected over part of a river in Brazil, in which negroes turn up the sand under the eye of an overseer; and any one who finds a diamond of a certain weight, is entitled to his freedom, and to rewards for other sizes.

DIAMOND (among Glaziers.) An instrument for cutting glass; in Printing, the smallest types or letters.

DIAMOND BEETLE. An exceedingly beautiful insect, so called from the marks on its wing sheaths, that resemble gems in brilliancy. It is decorated with golden, green, and black streaks. The abdomen is green, with silvery rings. This rich and curious insect forms a most splendid and dazzling object under the microscope.

DIANA. The goddess of hunting, the daughter of Jupiter and Latona, and twin

sister of Apollo; she is commonly represented with a bow and arrow.

DIANDRIA (in Botany.) One of the classes in the Linnæan system, consisting of such plants as have hermaphrodite flowers with two stamens, as the olive, the privot, the nightshade, &c.

DIAPASON (in Ancient Music.) The interval of an octave; among Musical Instrument Makers, the diapason is a scale or measure.

DIAPER. A kind of linen for the table, wrought with flowers.

DIAPHANOUS. Transparent like glass.

DIAPHONIA. The precepts formerly taught for the use of the organ.

DIAPHORETICS. Medicines which promote perspiration.

DIAPHRAGM. A muscular membrane which divides the thorax from the abdomen.

DIARRHŒA. A disorder which consists in the frequent discharge, by stool, of a bilious humour from the intestines.

DIARY. An account of what passes in the course of a day.

DIATESSERON (in Music.) An interval composed of a greater and less tone.

DIATESSERON (in Theology.) The four Gospels.

DIATRIBE. A disputation or controversial discourse.

DIBBLE. A pointed tool for making holes to plant in.

DICE. Pieces of bone or ivory, of a cubical form, and marked with dots on each of their faces from one to six. There are divers ways of making dice to suit the purposes of gamblers and villains: as by sticking a hog's bristle in them, so as to make them run high or low:—or by drilling and loading them with quicksilver, which cheat may be discovered by endeavouring to balance them by their diagonal corners, for if they are false, the heavy sides will, under such circumstances, always turn down.

DICTATOR. An extraordinary magistrate among the Romans, chosen upon particular occasions; and invested with absolute power. He laid down his office as soon as the occasion ceased for which he had been appointed.

DICTIONARY. A collection of the words of a language explained in alphabetical order.

DICTUM. The positive opinion pronounced by an individual.

DIDACTIVE. An epithet for what serves to teach or explain the nature of things, as didactic pieces.

DIDYNAMIA (in Botany.) One of the Linnæan classes, including such plants as have flowers with four stamens in two pairs of different lengths.

DIE. The stamp used in coining.

DIE (in Architecture.) The middle of the pedestal.

DIER. One who follows the trade of dyeing.

DIER'S BROOM. A shrub so called from its flowers, which yield a colour used by diers in dyeing wool green.

DIES NON; that is, Dies non juridicl. Days on which no pleas are held in any court of justice.

DIET. Food regulated by the rules of medicine. Also, a German parliament.

DIETETICS. That branch of the medical science which treats of the diet or food suited to particular cases.

DIEU ET MON DROIT; that is, God and my right. The motto on the arms of the King of England.

DIFFERENCE (in Arithmetic.) The remainder, when one number has been subtracted from another.

DIFFERENCE (in Heraldry.) What is added in coats of arms as a mark to distinguish younger families from the elder.

DIFFERENCE OF LONGITUDE (in Astronomy.) An arc of the equator, comprehended between the meridians of two places on the earth.

DIFFERENTIAL CALCULUS. A method of determining the ratios of the simultaneous increments of any quantity, and the variable quantity on which it depends. It differs from fluxions, inasmuch as areas, solids, &c. are not supposed to be generated by motion, but made up of indefinitely small parts, each of which parts bear in each particular case a given or ascertained ratio to the whole; and it is now generally preferred to the method of fluxions. Its notation is by prefixing a *d* to

the variable quantity, whose differential is meant to be represented, as dx, or d^2x for the second differential.

DIGESTER. An apparatus for reducing substances to a pulp or jelly.

DIGESTION. The dissolving or concocting food in the stomach, so that its various parts may be applied to their proper uses.

DIGESTION (in Chymistry.) The continual soaking of a solid substance in a liquid, so that by the application of heat it may be reduced to a soft substance.

DIGESTION (in Surgery.) The disposing a wound to suppurate or discharge good pus.

DIGESTIVES. Medicines which help digestion.

DIGESTS. The first volume of the civil law.

DIGIT. A measure equal to three quarters of an inch; also, a character denoting a figure, as 1, for one; 2, for two, &c.

DIGIT (in Astronomy.) The twelfth part of a diameter of the sun or moon.

DIGITALIS, or **Foxglove.** A kind of plant which is for the most part herbaceous, with a root that is either biennial or perennial. The stalk of this plant rises two or three feet high, and bears spikes of iron coloured or purple flowers. The purple foxglove is a native of England, and is much used in medicine.

DIGNITY (in Law.) Honour and authority.

DIGYNIA (in Botany.) An order in the Linnæan system, consisting of plants that have two pistils.

DILAPIDATION (in Law.) The ruin or damage which accrues to a house in consequence of neglect.

DILEMMA. An argument which cannot be denied in any way without involving the party denying in contradictions.

DILETTANTE. A lover of the fine arts.

DIMENSION. The measure or compass of a thing; a line has one dimension, namely, length; a surface two, namely, length and breadth; a solid three, namely, length, breadth, and thickness.

DIMINUTIVE (in Grammar.) A word or ending which lessens the meaning of the original word; as, rivulet, a small river.

DIOCESAN. A bishop who has charge of a particular diocess.

DIOCESS. The district or circuit of a bishop's jurisdiction.

DIODON. A genus of fishes, consisting of three species, of which the diodon hystrix, or sea porcupine, claims notice. It inhabits the Indian and American seas, and is about two feet in length. It possesses the faculty of raising and depressing its spines at pleasure, and likewise of flattening its body, or changing it to a globular form.

DIOECIA (in Botany.) A class in the Linnæan system, comprehending such plants as have no hermaphrodite flowers, but the males and females on distinct individuals, as the poplar, aspen, amber tree, willow, ozier, &c.

DIOPTRICS. That branch of optics which considers the different refractions of light in its passing through different mediums, as air, water, glass, &c.

DIP OF THE MAGNETIC NEEDLE. The property of the needle, when rubbed with the loadstone, of inclining the north end below the level of the horizon.

DIP OF THE HORIZON. See **Depression.**

DIPHTHONG. Two vowels sounded as one; as, æ.

DIPLOMA. A licence or certificate given by colleges, &c. to a clergyman to exercise the ministerial functions, or to a physician to practice physic.

DIPLOMACY. The functions of an ambassador residing at a foreign court.

DIPPING NEEDLE. The magnetical needle so duly poised about an horizontal axis, that, besides its direction towards the pole, it will always point to a determined degree below the horizon. The dipping needle was invented by Robert Norman, a compass maker at Ratcliffe, about the year 1580, and arose, according to his own account of the matter, from the following circumstance:—It was his custom to finish and hang the needles of his compasses before he touched them, and he always found, after the touch, the north point would dip or decline downward, pointing in a direction under the horizon; so that to balance the needle again, he was always forced to put a piece of wax on the south end, as a counterpoise. After having observed this effect frequently, he was at length led to mark the quantity of the dip, or to measure the greatest angle which the dip would make with the horizon; he found at London it was 71° 50′, but by subsequent experiments the dip is found to decrease about 1′4″ every year.

DIPTERA (in Entomology.) An order in the Linnæan system, comprehending insects that have two wings, with a poiser, as the fly, the gnat, &c.

DIPUS, the *Jerboa*, a genus of Mammalia in Natural History, containing four species.

DIRECTION (in Astronomy.) The motion and other phenomena of a planet when it is direct, or going forward in the zodiac according to the natural order of the signs.

DIRECTION, LINE OF (in Gunnery.) The direct line in which a piece is pointed.

DIRECTION OF A LETTER. The superscription or address.

DIRECTION POST. A post set up in roads to direct the traveller to particular places.

DIRECTION WORD (in Printing.) The word which begins the next page, which was formerly set at the bottom of the page preceding.

DIRGE. A song of lamentation at funerals.

DIRK. A kind of dagger used by the Highlanders.

DISBANDED. An epithet used for a regiment discharged from service.

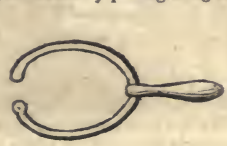
DISC. The body or face of the sun or moon as it appears to us.

DISC (in Optics.) The magnitude of a telescope glass, or the width of its aperture.

DISCHARGE (in Law.) A release from confinement.

DISCHARGE (in Military Affairs.) A remission of service for the time that a soldier has been engaged.

DISCHARGING ROD. An instrument used in electrical experiments, formed of metal wire, with balls at the end, a joint in the middle, and a glass handle; and as the wire is a non-electric, or unexcitable surface, the excitement of the air, or of the two sides of an excited surface, is restored by passing along it.



DISCLAIMER (in Law.) A plea containing an express denial.

DISCIPLINE. In general, a rule or method of government.

DISCIPLINE (in Military Affairs.) The training up soldiers for service.

DISCORD. An inharmonious combination of sounds.

DISCOVERY (in Law.) The disclosing or revealing any thing by a defendant in his answer to a bill filed against him in a court of equity.

DISCOUNT (in Commerce.) An allowance made on a bill or any other debt not yet become due, in consideration of immediate payment.

DISEASE. That state of a living body which interrupts any of its functions.

DISEMBOGUING. A term applied to rivers which discharge themselves into the sea.

DISJUNCTIVE. An epithet for conjunctions which separate the sense, as, but, nor, &c.

DISLOCATION. The putting a bone out of its place.

DISPENSARY. A charitable institution, where medicine and advice are given gratis to the poor.

DISPENSATION (in Law.) An exclusive privilege to do any thing that is otherwise prohibited by law.

DISPENSATION (in Ecclesiastical Affairs.) An indulgence granted by the Pope to do what is otherwise forbidden by the church of Rome.

DISPENSATORY, or PHARMACOPŒIA. A book which directs apothecaries in the compounding or making up medicines.

DISPERSION (in Optics.) The divergency of the rays of light.

DISPOSITION (in Military Affairs.) The placing an army ready for attack or defence.

DISPOSITION (in Architecture.) The just placing all the several parts of a building.

DISSECTION. The cutting asunder animal bodies, in order to come at the knowledge of their parts.

DISSEISIN (in Law.) The wrongful putting out of one that is seised of his freehold.

DISSENTER. One who dissents or departs from the forms of the Episcopal Church as established in England.

DISSIPATION (in Medicine.) An insensible loss or consumption of the minute parts of a body.

DISSIPATION (in Optics.) The Circle of Dissipation is that circular space upon the retina which is taken up by the rays of each pencil in indistinct vision.

DISSOLVENT. A liquor proper for reducing a solid body to the state of a fluid.

DISSOLUTION. The reducing of a solid body into a fluid state, by the action of some menstruum or dissolvent.

DISSONANCE (in Music.) A disagreeable interval between two sounds, which, being continued together, offends the ear.

DISTAFF. An instrument anciently used in spinning.

DISTEMPER (in Painting.) Colours not mixed with oil or water, but with size, whites of eggs, &c.

DISTEMPER (in Farriery.) A disease incident to dogs, horses, and other domestic animals.

DISTICH. A couplet or couple of verses in poetry making complete sense.

DISTILLATION. A chymical process of drawing out the humid, spirituous, oleaginous, or saline parts of mixed bodies, by means of heat, these parts being first resolved into a gas or vapour, and then recondensed into a fluid, by passing through a spiral tube or worm, immersed in cold water, proving them-

selves what is called the spirituous part of the compound, which, submitted again to the same process, becomes pure or rectified spirit. In the preparations of the original compound, and in the management of the results, consists the art of a distiller.

DISTRESS (in Law.) The distraining or seizing upon a person's goods for the payment of rent or taxes, &c.

DISTRIBUTION (in Printing.) The taking a form asunder, so as to separate the letters.

DISTRIBUTION (in Medicine.) The circulation of the chyle with the blood.

DISTRIBUTION (in Logic.) The distinguishing a whole into its several constituent parts.

DISTRIBUTIVE JUSTICE. Justice administered by a judge, so as to give every man his due.

DISTRIBUTIVE NOUNS. Words which serve to distribute things into their several orders, as, each, either, every, &c.

DISTRICT (in Law.) That circuit or territory within which a man may be forced to make his appearance.

DITCH. A trench cut in the ground about a field.

DITHYRAMBIC. A sort of hymn anciently sung in honour of Bacchus; any poem written with wildness.

DITTO, abbreviated D°. The same as the aforesaid; a term used in accounts.

DIVAN. A council of state among the Turks; also, a court of justice.

DIVER. A waterfowl that frequents lakes, and goes with difficulty on land.

DIVERGENT, or DIVERGING. An epithet for several things which have the property of divergency.

DIVERGING RAYS (in Optics.) Those which, issuing from a radiant point, continually recede from each other.

DIVERGING SERIES (in Mathematics.) A series the terms of which always become larger the farther they are continued.

DIVIDEND (in Arithmetic.) The number to be divided.

DIVIDEND (in Commerce.) The share of profit in a joint stock, which is to be divided among the shareholders; also, that part of a debtor's effects which is to be divided among the creditors.

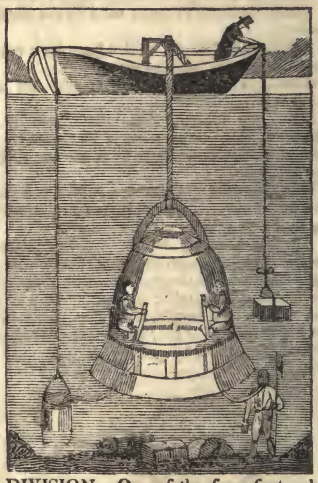
DIVINATION. A practice among the heathens of foretelling future events by the flight of birds or other signs.

DIVINE. A minister of the gospel, a clergyman.

DIVINER. One who professes the art of divination; a conjuror.

DIVING. The art of descending under water to a considerable depth, and remaining there for a length of time, as occasion may require. The practice of diving is resorted to for the recovery of things that are sunk, &c.

DIVING-BELL. A machine which depends on the principle, that air maintains its own space as well as water. Hence, if a bell, or other inverted cavity, filled with air, be sunk in the water, the air, by its elastic force, keeps the water out of the vessel, and a person or persons may live in the said cavity, and perform any labour at the bottom of the water, provided they are supplied with air through a tube or pipe, to re-supply the oxygen which they fix by breathing, or by their candles. The engraving represents such an apparatus with men at work, and in this manner much property lost in wrecks has been recovered.



DIVISION. One of the four first rules or operations in arithmetic, by which we find how often one quantity is contained in another. There are three numbers contained in this operation, namely, the dividend, or number to be divided; the divisor, or that by which one divides; and the quotient, or that number which shows how often the second is contained in the first.

DIVISION (in Military Affairs.) A body of men commanded by a particular officer.

DIVISION (in Music.) That part into which an octave is divided, as quavers, &c.

DIVISION (in Printing.) A mark to divide compound words, as (-) in May-pole.

DIVORCE (in Law.) A lawful separation of man and wife, pronounced by a competent judge, on cognizance had of the cause.

DIURETICS. Medicines which promote the urinary discharge.

D. M. Doctor Medicinæ, Doctor of Medicine.

DOCK (in Shipbuilding.) A trench near

a harbour, fitting for the building and repairing of ships.

DOCK (in Botany.) A plant which grows wild, and infects corn fields; some species of it have medicinal virtues.

DOCK (in Farriery.) The stump of a horse's tail.

DOCKET (in Commerce.) A bill with a direction tied to goods.

DOCKET (in Law.) A small piece of paper or parchment containing the heads of a large writing; also, a subscription at the foot of letters patent. 'To strike a docket,' is the same as to make a man a bankrupt by process of law.

DOCKING. Cutting off a horse's tail to the stump.

DOCTOR. Literally, a teacher; the highest degree in any faculty in a university, as D. D. Doctor of Divinity, M. D. Doctor of Medicine, D. Mus. Doctor of Music, LL. D. Doctor of Laws.

DOCTOR'S COMMONS. A college of civilians in England.

DODECAHEDRON (in Geometry.) A solid bounded by twelve equal and equilateral pentagons.

DODECANDRIA. One of the Linnæan classes, comprehending those plants which have flowers with twelve stamens and upwards, as far as nineteen inclusive, as dyer's weed, purslane, houseleek, &c.

DOE. The female deer.

DOG. A domestic, faithful, and valuable animal, of which there are a great many spe-

cies in the United States, as the mastiff, bulldog, hound, greyhound, spaniel, terrier, pointer, &c., besides those of foreign extraction, as the Newfoundland dog, the pudel, the Danish dog, the Spanish bloodhound, &c. The wolf, the hyæna, and the fox, are of the same genus.

DOG-DAYS. Certain days in the month of July and August, which are usually very hot, owing, as is supposed, to the influence of the Dogstar, which then rises and sets with the sun.

DOGE. The chief magistrate in the republics of Venice and Genoa.

DOGFISH. A fish of the shark kind.

DOGGREL. An irregular kind of versification.

DOGMATIC SECT. An ancient sect of physicians, of which Hippocrates and Galen were at the head. They supposed principles, and from them drew inferences applicable to particular cases; they were opposed to the empirici, or theorists, answering to the quacks of modern days.

DOGSTAR, or SIRIUS. A star of the greatest magnitude in the constellation Canis.

DOG'S TOOTH. A plant, the root of which resembles the tooth of a dog.

DOLPHIN. An animal which, though commonly reckoned among the fishes, is classed by Linnæus under the mammalia. It has an oblong body, from two to four feet in length, and swims with great rapidity.

DOME. A vaulted roof or tower of a church.

DOMESDAY BOOK. An ancient record, made in the reign of William the Conqueror; or a book of the survey of England, containing an account of all the demesnes of the crown.

DOMINICAL LETTER. One of the first seven letters in the alphabet, with which the Sundays throughout the whole year are marked in the Almanac. After the term of twenty-eight years, the same letters return in the same order again.

DOMINO. A game played by two or four persons, with twenty-eight pieces of ivory, called cards.

DOMINO (in Ecclesiastical Affairs.) A sort of hood worn by canons of a cathedral.

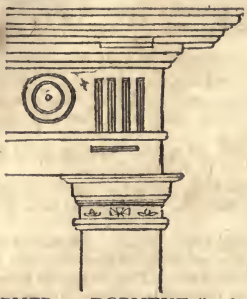
DON. A title of honour in Spain, answering to Dom, or Dominus, Lord.

DONATIVE (in Law.) A benefice given to a clerk by the patron, without presentation to the bishop.

DONJON (in Fortification.) A tower or redoubt, where the troops of a fortress may retreat in case of necessity.

DORIC ORDER (in Architecture.) The most ancient of the Grecian orders, made, as

is said, in imitation of the hovels erected by the original inhabitants of Greece.



DORMER, or DORMENT (in Architecture.) A window made in the roof of a building.

DORMOUSE. An animal of the mouse kind, which makes a bed of moss or dry leaves in a hollow tree, or under shrubs; lays in a store of nuts or other food, and on the approach of cold weather, rolls itself in a ball, and sleeps the greatest part of the winter.

DORSAL. An epithet for what belongs or relates to the back, as the dorsal fins of the fishes.

DOSE. The quantity of any medicine prescribed by the physician to be taken by the patient at one time.

DOSE (in Chymistry.) The quantity of any substance which is added to any solution, in order to produce any chymical effect.

DOUBLE ENTENDRE. An ambiguous expression, mostly intended to convey some improper insinuation.

DOUBLING A CAPE. A sea term, for sailing round or passing beyond it.

DOUBLON. A Spanish coin, varying in value from $13 to $17.

DOUCEUR. A gift made to gain the favour or interest of a person.

DOVE. A wild pigeon, of which there are three sorts, namely, the ring dove, the largest of the pigeon tribe, so wild that it cannot be domesticated; the stock dove, that is migratory; and the turtle dove, a shy and retired bird, living in the woods.

DOVE-TAILING. A method of joining one board into another, by pins in the one fitted to holes in the other.

DOWAGER (in Law.) Properly, a widow who enjoys a dower; commonly applied as a title to the widows of princes and nobility.

DOWER (in Law.) The portion which a widow has of her husband's lands at his decease.

DOWLAS. A sort of linen cloth.

DOWN. The finest and softest part of the feathers of a goose, &c.

DOWNS. A bank of sand formed by the sea along its shores; also a large open plain.

DR. An abbreviation for debtor and doctor.

DRACHM. The eighth part of an ounce.

DRACO. A constellation in the northern hemisphere.

DRACO VOLANS. A meteor which appears in the form of a flying dragon in cold marshy countries, consisting of phosphuretted or carburetted hydrogen.

DRAFT (in Commerce.) A bill drawn by one person upon another for a sum of money.

DRAG. A sort of hook to catch hold of things under water.

DRAGOMAN. An interpreter in the eastern countries, whose office it is to interpret for the European ambassadors at the Ottoman court.

DRAGON. See FLYING DRAGON.

DRAGON FLY, or DEVIL'S NEEDLE. An insect which hovers over stagnant waters, having four extended wings; they are furnished with jaws; the antennæ are shorter than the thorax; and the tail of the male is terminated by a kind of hooked forceps. There are many species, with a great diversity of colours.

DRAGON'S BLOOD. A gum or resin of a tree in the Canaries and New Spain, formerly called Draco Arbor, now Astragalus; it is hard, compact, moderately heavy, and of a dusky red colour, but of a bright scarlet when powdered.

DRAGON'S HEAD. One of the nodes of the planets, particularly the moon, as distinguished from the dragon's tail. The former, marked thus, (☊) is the northward point, as she ascends from the south to the north; the latter is the southward point, marked (☋.)

DRAGOON. A soldier who fights sometimes on foot and sometimes on horseback.

DRAGS. Floating pieces of timber, joined so that they may carry a load down a river.

DRAIN. A watercourse sunk in a field for the purpose of carrying off the water.

DRAINING, or LAND DRAINING. The process of carrying water off from the land, sometimes by means of open drains, but more commonly by drains made to a certain depth under the ground, which are filled with bushes so as to admit the water.

DRAM. See DRACHM.

DRAMA. A play, or any place fitted for theatrical representation. Dramas are either tragedies, comedies, operas, or farces.

DRAMATIS PERSONÆ. The performers and characters in any particular place.

DRAPER. A seller of cloth; as, a woollen draper and a linen draper.

DRAPERY. In sculpture and painting, signifies the representation of the clothing of human figures, and also hangings, tapestry, and curtains.

DRAUGHT, or DRAFT (in Architecture.) The figure of an intended building, described on paper.

DRAUGHT (in Navigation.) The quantity of water which a ship draws when she is afloat.

DRAUGHT (in Military Affairs.) A detachment of soldiers drawn off from the main army.

DRAUGHT (in Husbandry.) What pertains to drawing, as draught horses.

DRAUGHTS. A game played with pieces on a checkered board, like a chess board, where by particular movements they are enabled to take each other, according to certain rules.

DRAUGHTSMAN. One who follows the profession of taking plans and sketches of buildings and places.

DRAWBACK (in Commerce.) An allowance made to merchants on the exportation of goods which paid duty inwards.

DRAWBRIDGE. A bridge made so as to let up and down at pleasure.

DRAWER OF A BILL. One who writes and signs a bill for a sum of money to be paid to another.

DRAWING. The art of representing objects on paper, canvass, &c. by means of a pencil or a pen; also, the representations so made, as drawings in India ink, pencil drawings, &c.

DRAWINGROOM. The room to which, in polished society, ladies withdraw after dinner parties.

DRAW-WELL. A deep well, in which water is drawn up by means of a wheel, a rope, and a bucket.

DRAY. A brewer's cart.

DRAYMAN. The driver of a dray.

DREAM. The imagination, fancy, or reverie, of a sleeping man; which is said to be deducible from the three following causes: 1. The impressions and ideas lately received, and particularly those of the preceding day. 2. The state of the body, particularly the stomach and brain; and, 3. Association.

DREDGE. A kind of net for catching oysters.

DREDGING. The process of catching oysters by the removing or dragging the mud with dredges, &c.

DRESS. Clothing for the body.

DRESS (in Husbandry.) Any stuff, such as loam, sand, &c. which is put on land to improve the soil.

DRESSER (in Military Affairs.) One who dresses a line of soldiers, or makes them stand with an even front.

DRESSER (in Housewifery.) A bench on which meat is dressed or prepared for the cook.

DRESSING (in Husbandry.) The cleaning of hemp, flax, &c. so as to prepare it for spinning.

DRESSING (among Letterfounders.) The scraping, bearding, &c. of letters, before they are used by the printer.

DRESSING (in the Manege.) The cleaning and trimming a horse.

DRIFT. A sea term for any thing that floats upon the water; also, the course which a ship makes when she is driven by a storm.

DRILLING (in Military Affairs.) The teaching young recruits the first principles of military movements.

DRILLING (in Husbandry.) A modern mode of putting seed into the ground by a machine called a drilling machine, which makes channels in the ground and lets the seed into them, so that it comes up in rows at regular distances from each other.

DRIP. The projecting part of a cornice.

DROMEDARY. The Arabian camel, with a single bunch; a beast of burden in Western Asia, docile, patient, and hardy, but very un-

easy to ride upon, though generally used for that purpose in long journeys. They are commonly about six feet high, but nine feet to the top of the head; and they are taught to kneel when they take up their load.

DRONE. A large kind of bee or wasp, which is without a sting. It is the male of this tribe of insects.

DROP. An ornament in pillars of the Doric order.

DROPSY. A diseased action in the assimilating organs, which converts the aliment into liquids, accumulating locally, or distributing themselves into the membranes of the skin.

DROVERS. Men employed to drive cattle to or from market.

DROWNING. Suffocation by water, from which the sufferer may be recovered by being conveyed to a warm bed, rubbed dry and well, the head kept up, the lungs inflated, by blowing with a bellows into one nostril, and stopping the other and the mouth, and interchanging the operation; by putting hot bottles or bricks to the feet and stomach, injecting tobacco fumes into the fundament, and rubbing the stomach, &c. with flannels and brandy, for one, two, or three hours.

DRUGGET. A kind of woollen stuff.

DRUGGIST. A dealer in drugs.

DRUGS. All kinds of simples, which are for the most part dry, and fit for medicinal uses.

DRUIDS. The priests or ministers of religion of the ancient Britons and Gauls. They were chosen out of the best families, and were held, both by the honours of their birth and their office, in the greatest veneration.

DRUM. A musical instrument, much used in the army, consisting of vellum strained over a wooden cylinder on each end, and beaten with sticks.

DRUM (in Anatomy.) A membrane of the cavity of the ear.

DRUMMER (in Military Affairs.) A soldier who beats the drum.

DRUM MAJOR. He who has the command over the other drummers.

DRUPE (in Botany.) A pulpy fruit, containing a nut or stone, with a kernel like the plum.

DRYADS. Nymphs inhabiting woods.

DRY DOCK. A modern invention, by which vessels of large size are expeditiously taken from the water, for the purpose of repairing; it is on the plan of an inclined plane; the vessels being raised either by horse or steam power. While undergoing repairs, their situation is similar to that of a vessel on the stocks.

DRY ROT. A fungus which grows in timber, decomposes its fibres, and destroys the cohesion of the parts.

DUCAL CORONET. A circle of gold with eight strawberry or parsley leaves of equal height about the rim.

DUCAT. A coin; value, when silver, about 112 cents, and when gold, 237 cents.

DUCATOON. A silver coin in Holland, worth about 122 cents.

DUCK. A water fowl, so called from its plunging. There are many varieties of the duck, both wild and tame.

DUCK, or RUSSIA DUCK (in Commerce.) The best sort of canvass.

DUCKWEED. A plant growing in ditches and stagnant waters; it is an annual, much liked by ducks.

DUCT. A channel or passage for any fluid in the body.

DUCTILE. The power of being drawn out without breaking.

DUCTILITY. The property of some metals, as gold, silver, copper, &c. &c. of expanding by hammering; thus, a grain of gold will gild ninety-eight square yards.

DUEL (in Law.) Originally a combat between two persons for the trial of the truth; but now an unlawful battle between two persons on some private quarrel, in the which, if death ensue, both the principal and the seconds are guilty of murder. Duels generally originate in some trifling difference of opinion, wherein the parties afford indubitable evidence of madness, by staking their lives. It is often justified as a means of insuring good manners, as though there were no other means.

DUET. A little song in two parts.

DUKE. A sovereign prince in Germany; the highest title of honour in England next to the Prince of Wales.

DUMBNESS. The want of speech, generally consequent on want of hearing, and hence of the power of imitation; proving that speech is not a natural, but an acquired faculty.

DUMOSÆ. One of Linnæus' natural orders of plants, consisting of shrubs and bushes, as laurels, firs, &c.

DUNGEON. A dark subterranean prison.

DUODECIMALS, or CROSS MULTIPLICATION. A rule used by workmen and artificers in computing the contents of their work. Dimensions are usually taken in feet, inches, and parts.

DUODENARY ARITHMETIC. That in which the local value of the figures increases in a twelvefold proportion.

DUPLICATE. Any manuscript copied after another.

DUPLICATE RATIO (in Geometry.) The product of a ratio multiplied into itself.

DURA MATER. The membrane which lies between the bones of the skull and the parts of the brain, dividing it into two parts.

DURANTE (in Law.) During; as, Durante bene placito, during pleasure; Durante minore ætate, during minority.

DURESS. An unlawful imprisonment.

DUTCHY (in Law.) A seignory or lordship in England, formerly established by the king, with several privileges, honours, &c.

DUTY. What is paid or due by way of custom on merchandise in general.

DWARF. A man much below the ordinary size, of whom the most celebrated instances are Jeffery Hudson, but eighteen inches high at seven years old, and forty-five inches at thirty; and Count Borowlaski, but two feet four inches at twenty-two.

DWARF (in Botany.) A term for plants that grow low, as distinguished from those of the same kind which rise to a considerable height.

DYKE. A bank, mole, or causeway raised to stop the floods.

DYNAMICS. The science of moving powers, particularly of the motion of bodies mutually acting on one another. It is a branch of the science of mechanics, and is distinguished from statics in this, that the former considers bodies only as regards their motion, but the latter considers those bodies when in a state of rest, as to their equilibrium. When fluids, instead of solids, are the subjects of investigation, that which treats of their equilibrium, weight, pressure, &c. is called hydrostatics, and that which treats of their motion, hydrodynamics.

DYNASTY. A series of princes who have reigned successively in any kingdom, particularly applied to the Egyptian kings.

DYSENTERY. A difficulty or disturbance in the intestines, which impedes their functions.

E.

E, the fifth letter of the alphabet, stood as a numeral for 250; stands as an abbreviation for *est*, as *i. e. id est*; also, for east; as a sign of particular notes in music.

EAGLE. A bird of prey, said to be the swiftest, strongest, and boldest of all birds. It has a long hooked beak, yellow scaly legs, thick crooked talons, and a short tail. There are several species; as the sea eagle, known in Scotland and Ireland, which feeds on fish; the golden eagle, three feet long, with wings extending above seven feet, which devours fawns, lambs, kids, &c. and lives to a great age; the cinereous eagle, common in the mountains of Europe; the crying or plaintive eagle, of Siberia and Asia; and also the bald or white-headed eagle, which preys on flesh and fish. The talons and bills of all the species are strong and terrible, and their sight is keen and distant. The eagle, as a bearing in coat armour, is reckoned as honourable among

the birds as the lion is among the beasts. The golden eagle is here represented.

EAR. The organ of hearing in an animal body, conveying undulations of air to the nerves and brain of an animal. The external cartilage collects the sound into the concha, at the bottom of which is the tympanum, like the skin of a drum, and beneath the tympanum is a cavity, terminated by a tube called the eustachian tube; and further on are several winding passages, filled with a watery fluid, in which the nerves are situated.

EARL. A title of nobility, between a marquis and a viscount, now the third degree of rank.

EARL'S CORONET. Has no flowers raised above the circle, like that of a duke and a marquis, but only points rising, and a pearl on each of them.

EARNEST (in Commerce.) Money advanced to bind the parties to the performance of a verbal bargain.

EAR-RING. An ornament hung on the ears, particularly of women.

EARTH (in Mineralogy.) A substance formerly considered as one of the four elements of which the material world is composed. The term is now applied to such substances as have neither taste nor smell, that are incombustible, and nearly insoluble in water, the specific gravity being under five, as lime, barytes, silica, clay, &c.

EARTH (in Astronomy.) One of the primary planets, marked by the character ⊕. According to the Ptolemaic system, it was supposed to be immoveable in the centre of the universe, but according to that of Copernicus it moves from west to east, so as to occasion the succession of day and night, and also annually round the sun, so as to cause the different seasons. In the solar system it has its orbit between Mars and Venus, at the distance of about 95 millions of miles from the sun, being accompanied by the satellite of the moon, which makes its own revolution round the earth thirteen times, while both make one revolution round the sun. It is 7924 miles in diameter, and its surface contains 150 millions of square miles, in seas inhabited by fishes, and 50 millions of land inhabited by animals and insects; of which America is a third, Africa and Asia a fourth each, and Europe a sixth. Like the rest of the planets, it has twofold motions, one of 68,000 miles an hour in its annual orbit, and another of 1000 miles in its diurnal rotation; the two forces being so exactly balanced, that the increased rotative force at the centre diminishes the weight of bodies only a 289th part, as compared with the poles; the general velocity of the fall being one foot in a quarter of a second. The exterior surface of the land consists of granitic and primary mountains, which slope beneath the general surface, while that surface consists of rocks and strata of later formation, or of mixed soil and ruins of rocks, which appear to have been displaced by the sea. As man is acquainted with the substance of the earth to the depth only of a mile out of 4000, and as the air, wind, and water, are constantly changing the surface, general theories, such as those called Vulcanic and Platonic, are contemptible, as are all those which relate to the origin and end of such a planet, except the scriptural account.

EARTH NUTS. A kind of plant, the pods or nuts of which ripen under ground. The nuts yield a quantity of oil.

EARTHQUAKE. A violent shock or concussion of the earth, or some parts of it, by which buildings are overthrown, sometimes accompanied by rents, and by shaking of the surface, so as to swallow up towns and tracts of country. They are ascribed to the accumulation of hydrogen gas in caverns in the earth, or to sudden creations of aqueous gas, owing to water running through fissures upon pyrites, or upon heated bodies. Electricity is an accompaniment, not a cause. The lifting up of great masses of the earth, of course disturbs all the waters on the surface, and hence the phenomena at sea, and on coasts. They are the most terrible phenomena known to man, and most countries are visited by them. They are, however, most frequent in hot countries.

EARWIG. An elegant insect with sheath wings, which was formerly imagined to creep into the ear, but this idea does not appear to be borne out by the fact, no case of the kind having yet been witnessed or recorded.

EASEL. A frame on which a painter sets the cloth, &c. to be painted.

EAST. One of the four cardinal points, where the sun rises.

EASTER. A solemn festival observed among some denominations of Christians, in commemoration of the resurrection of our blessed Lord and Saviour Jesus Christ. This feast was fixed by the council of Nice, in the year 325, to be held on the Sunday which falls upon or immediately after the full moon, which happens next after the twenty-first of March.

EASTERLING. A money coined by Richard II., which is supposed to have given rise to the name of sterling, as applied to English money.

EAU DE LUCE. A fragrant liquor, made chiefly of mastic dissolved in alcohol.

EAVES. The edges of the roof of a house,

which overhang the wall, for the purpose of throwing off the water.

EAVESDROPPER. One who stands under the windows of houses, for the purpose of listening to what passes within.

EBB. The retirement or going away of the tide.

EBONY. A sort of black wood, which admits of a fine polish. It is the wood of the eben tree, which grows in India, Ethiopia, and the Levant.

EBULLITION. The act of boiling up with heat, when a fluid, as water, is passing off from a state of fluidity to that of a uniform gas, in consequence of the application of heat, which converts the water into vapour.

ECCE HOMO. A painting which represents our Saviour in a purple robe, and with a crown of thorns on his head.

ECCENTRIC CIRCLES. Circles not having the same centre.

ECCENTRIC CIRCLE, or ECCENTRIC (in Modern Astronomy.) The circle that circumscribes the elliptical orbit of the planet.

ECCENTRICITY (in Modern Astronomy.) Is the distance between the sun and the centre of the eccentric.

ECCLESIASTIC. A clergyman; one dedicated to the ministerial office.

ECHO. A sound reflected or reverberated from some body, and thence returned or repeated to the ear. Echoing bodies may be so contrived as to repeat the echo several times. At Milan, in Italy, there is said to be an echo which reiterates the report of a pistol fifty-six times, and if the report be exceedingly loud, the reiteration will exceed that number. The celebrated echo at Woodstock, in Oxfordshire, England, repeats the same sound fifty times. But the most singular echo hitherto spoken of is that near Rosneath, a few miles from Glasgow, in Scotland. If a person placed at a proper distance from this echo plays eight or ten notes of a tune with a trumpet, they are correctly repeated by the echo, but a third lower; after a short pause, another repetition is heard, in a lower tone; and then, after another interval, a third repetition follows in a still lower tone.

ECHO (in Architecture.) Any vault or arch constructed so as to produce an artificial echo. These are generally of a parabolic or elliptic form: of this kind is the whispering gallery in St. Paul's Cathedral, London, and in some other large buildings.

ECHO (in Poetry.) A sort of verse which returns the sound of the last syllable.

ECHOMETER. A kind of scale or rule to measure the duration of sounds.

ECLECTICS. Ancient philosophers, who adhered to no sect, but selected what was best and most rational.

ECLIPSE. The shadow which an opaque body throws on another body, on passing between it and a centre of illumination; consequently the moon, in its orbit round the earth, falls within the shadow of the earth, and suffers an eclipse; the earth also falls within the shadow of the moon, and then the sun is obscured or eclipsed. An eclipse does not, however, happen at every new or full moon, because the orbit of the moon is not exactly in the same level as the ecliptic, but the moon's orbit inclines five degrees nine minutes, consequently the earth's shadow commonly falls to the north or south of the moon, as it may be; and so it is with the shadow of the moon in regard to the earth, while that shadow is so small that it never covers but a small portion of the earth. Eclipses, therefore, only take place when the new or full moon happens near the time at which the moon in her orbit is crossing the plane of the ecliptic, called her nodes, either in ascending or descending, and these times are indicated in the almanac. The angle under which the moon appears to the earth, is 31′ 26″; but that of the earth to the moon is 115′ 8″. The length of the earth's shadow is four times the distance of the moon from the earth; but the shadow of the moon scarcely reaches the earth's centre, and therefore is very small at the surface; whereas that of the earth is 2 3-4 greater than the diameter of the moon; but to suffer an eclipse, the moon must be within 13 degrees of her node. The sun cannot be totally eclipsed more than eight minutes. As a mere shadow, it is obvious that eclipses have no power or signification, good or bad.

ECLIPTIC. That circle of stars in the heavens, through which the earth would appear to move, if it were seen from the sun; and with reference to appearances on the earth, that circle through which the sun appears to move, while the earth is performing its orbit. The axis of the earth is, however, not perpendicular to the plane or level of the ecliptic, but declines from the perpendicular 23° 28′, which position it maintains throughout the orbit, causing the variations in the length of the day, and the four seasons. But this angle is supposed to be diminishing at the rate of a minute in a century.

ECLOGUE. A pastoral poem, wherein shepherds are introduced discoursing together. It is so called after the Eclogues of Virgil.

ECONOMY. In the general sense, the regulation of things, or the due distribution of means to an end. Political Economy is a science which treats on the wealth and resources of a nation, and the manner in which they may be best employed to increase the prosperity of the people. Adam Smith has treated at large on this subject in his Wealth of Nations.

E CONTRA. On the contrary.

ECTHLIPSIS. The cutting off a vowel or consonant.

EDIBLE ROOTS. Roots that are fit for food, as the potato, carrot, &c.

EDICT. A public ordinance or decree.

EDITION. The act of publishing a book; also, the republication of a book generally.

EDUCATION. The training and instructing of young persons in arts, sciences, and virtue; sometimes by private tutors, but generally in public schools; the future man depending much for his qualities, powers, and success, on the nature of the education which formed his mind. There are various systems, as the interrogative, by answering questions, and that of mutual instruction, by which senior pupils teach juniors.

EDULCORATION (in Chymistry.) The washing of things that have been calcined, in order to purify them from their salts.

EDULCORATION (in Pharmacy.) The sweetening any medicinal preparation.

EEL. A genus of fishes, of which the common species are very long-lived, viviparous, prolific, and torpid in winter, living on insects, worms, and eggs of other fish.

EEL SPEAR. A forked instrument, with which eels are caught.

EFFECTIVE (in Military Affairs.) A term for any body of men that are fit for service.

EFFECTS. The moveables or goods of any merchant, tradesman, &c.

EFFERVESCENCE (in Chymistry.) A violent commotion in the parts of any liquor, caused by the mixture of an acid with alkali.

EFFICIENT CAUSE. Any cause that actually produces an effect.

EFFIGY. Any representation whatever which gives, or is intended to give, the figure of a person; thus, the figure of a man dressed up and carried about in derision of any one is called his effigy; when this is burnt, the person is said to be burnt in effigy.

EFFLORESCENCE (in Botany.) The flowering of plants.

EFFLORESCENCE (in Chymistry.) The conversion of any body into a dry powder.

EFFLUVIA. Small particles perpetually flowing out of mixed bodies in the form of vapours, which are sometimes visible, as in the case of smoke or steam; and sometimes not perceptible, as insensible perspiration.

EFFUSION (in Surgery.) The natural secretion of fluids from the vessels.

EFT. A sort of lizard, which has a body covered with scales.

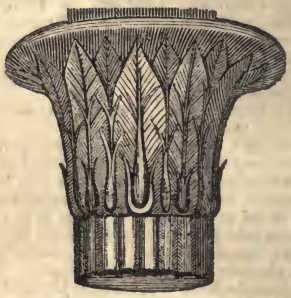
E. G. An abbreviation for Exempli Gratia, that is, for example, or by way of example.

EGG. The fœtus or production of feathered fowls; that which they lay, and from which, by a continuation of heat, they hatch their young; also, the spawn or sperm of other creatures. The eggs of birds are composed of the shell, or external coating, a thin, white, and strong membrane, the albumen or white, and the yolk.

EGLANTINE. The wild rose.

EGRET. A bird of the heron tribe.

EGYPTIAN ARCHITECTURE. Distinguished by capitals like the engraving, and lately much introduced.



EIDER-DUCK. A kind of duck remarkable for the softness of its down.

EIDOURANION. An exhibition of the heavens and the heavenly bodies.

EJECTMENT. A writ or action which lies for the lessee for a term of years, who is cast out before his term is expired; also, the putting any one out of an estate by a legal process.

ELASTIC. That power which a body has of returning to the form from which it has been distorted. Thus, the branch of a tree, the blade of a sword, &c. are said to be elastic, because, if they are bent to a certain degree, and then let go, they will of themselves return to their original form. Hence elastic bodies are such as admit of having their form altered by the application of a force or pressure, on the removal of which they will recover their original form or figure. In this respect, all bodies which come within our knowledge, are comprehended under one of these three distinctions. If two bodies, when pressed together, suffer an alteration in their form, and if, afterwards, on removing that pressure, they recover their original figures, they are called elastic. If, when pressed, their forms

are not in the least altered, they are called hard. And if, when being pressed as above, they alter their forms, and retain the same after the pressure is discontinued, they are called soft. And both these last kinds of bodies are termed non-elastic. We know, however, of no bodies that are perfectly hard, soft, or elastic, but all partake of these qualities in a greater or less degree. Water was a long time supposed to be incompressible, and perfectly non-elastic; but experience shows that this supposition was erroneous; and air, which is the most elastic fluid we know of, is now known not to possess that property in a perfect degree. Various hypotheses have been advanced by philosophers to account for this important property, some attributing it to one cause, and some to another; it is, however, now more generally supposed to arise from the presence of caloric, and the attractive and repulsive powers that have place between the minute particles which constitute a body, whether solid or fluid.

ELECTION (in Law.) The choice of two remedies, either of which, when chosen, the party is compelled to abide.

ELECTION. The choosing of persons to a particular office or situation by a majority of voices, as the election of members of congress, members of a legislature, town officers, and to the admission of members into societies; sometimes practised by show of hands, at others, by every elector giving his vote separately, with an oath in regard to his right and integrity; at other times, by black and white balls put into a box, called a ballot box; and occasionally by folding pieces of paper with the name of the candidate printed or written on the same.

ELECTIVE ATTRACTION. Another name for chymical affinities.

ELECTOR (in Political Affairs.) The title of such German princes as formerly had a voice in the election of the emperor of Germany.

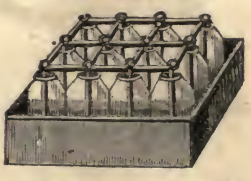
ELECTOR. Any one who has the right of giving his voice at an election, particularly at an election of members of legislatures, &c.

ELECTRIC. A term for any substance capable of being excited either by friction or otherwise, so as to exhibit the phenomena of electricity. Bodies thus capable of accumulating and retaining the electric fluid are impervious to its power, and it should seem that in proportion as they are capable of being excited, so are they less pervious; and, on the other hand, those which are more pervious are less capable of excitation. They are called electrics, or non-conductors, in distinction from those which are capable of receiving and transmitting electricity, and on that account called conductors. To the class of electrics belong resins, bitumens, glass, dry animal substances, feathers, paper, white sugar, oils, chocolate, &c. Substances of this description may be excited, so as to exhibit the electric appearances of attracting and repelling light bodies, emitting a spark of light, attended with a snapping noise, and yielding a current of air, the sensation of which resembles that of a spider's web drawn over the face, and a smell like that of phosphorus. This excitation may be effected either by friction, or by heating and cooling, or by melting and pouring one melted substance into another.

ELECTRIC FLUID. A fine rare fluid, supposed to issue from and surround electrical bodies.

ELECTRICAL APPARATUS. The various instruments and machines necessary for the most usual experiments in electricity, are two or three glass tubes, from three to five feet in length, and an inch and a half in diameter, one of which should be closed at one end, and furnished at the other end with a brass cap and stopcock, to rarefy or condense the enclosed air; insulated stools or supports of various forms, wires, fine brass chains, sticks of sealing wax, or cylinders of baked wood, for producing the negative electricity; proper rubbers, as black oiled silk, with amalgam upon it, and soft new flannel or hare or cat skins tanned with the hair on; coated jars, or plates of glass, either single or combined in a battery for accumulating electricity; metal rods, or dischargers; an electrical machine, electrometers, &c.

ELECTRICAL BATTERY. This is merely a combination of a number of coated glass jars, which serve as a continuation of the conductor, the outside of them being in actual or virtual contact with the rubber, and the disturbed plate being separated only by the thickness of the glass, on which account its intensity is greatly increased. The sudden restoration of the two sides produces astonishing effects on any interposed semi-conducting substances, melting and dispersing them, and even killing animals like lightning.



ELECTRICAL EEL. A particular sort of fish, so called from its power of producing an electrical shock whenever it is touched.

ELECTRICAL JAR. See LEYDEN PHIAL.

ELECTRICAL KITE. A contrivance devised by Dr. Franklin, for verifying his hypothesis respecting the identity of electricity and lightning. It consists of a large thin silk handkerchief, extended and fastened at the four

corners to two slight strips of cedar, and accommodated with a tail, loop, and string, so as to rise in the air like a paper kite. To the top of the upright stick of the cross was fixed a sharp pointed wire, rising a foot or more above the wood, and to the end of the twine, next the hand, was attached a silk riband. From a key suspended at the union of the twine and silk, when the kite is raised during a thunder storm, a phial may be charged, and electric fire collected, as is usually done by means of a rubbed glass tube or globe: kites made of paper, covered with varnish, or with well boiled linseed oil, in order to preserve them from the rain, with a stick and cane bow, like those of schoolboys, will answer the purpose extremely well, particularly in determining the electricity of the atmosphere.

ELECTRICAL MACHINE. The principal part of the electrical apparatus, so constructed as to be capable of exciting a great quantity of the electric fluid, and exhibiting its effects in a very sensible manner. It is constructed in various forms, but the cylindrical machine is in most common use. This consists of a glass cylinder, fixed in such a manner that it may be turned with a winch; a cushion, supported by a glass pillar, and having a piece of silk, which comes between it and the cylinder; and a tube, supported by a glass pillar, which is called the prime conductor, or simply the conductor. A more modern invention, called the Plate Machine, is here represented.

ELECTRICAL RUBBER. A part of the electrical apparatus, consisting of black oiled silk, which serves to aid the friction in the electrical machine.

ELECTRICAL SHOCK. The sudden explosion between the opposite sides of a charged electric; also, the effect produced on the frame in the act of being electrified.

ELECTRICITY, or ELECTRIC POWER. That property first discovered in amber of attracting light bodies when excited by heat or friction. This property, which derives its name from the Greek Electron, amber, in which it was first observed, has since been found in other bodies, as sealing wax, agate, and most kinds of precious stones, and has also, by subsequent discoveries, been found capable of being communicated under different circumstances. Dr. Franklin proved, by a variety of experiments, that the lightning spark of electricity, and the lightning that flashes from the clouds in a thunder storm, are exactly of the same kind, and operate in the same manner.

ELECTRICITY. The science which treats of the electric power, and its various laws, operations, effects, experiments, &c.

ELECTRICITY, ANIMAL. Some fishes have the property of giving shocks analogous to those of artificial electricity; namely, the torpedo, the gymnotus electricus, and the silurus electricus. If the torpedo, while standing in water, or out of water, but not insulated, be touched with one hand, it generally communicates a trembling motion or slight shock to the hand. If the torpedo be touched with both hands at the same time, one hand being applied to its under and the other to its upper surface, a shock will be received exactly like that occasioned by the Leyden phial. The shock given by the torpedo when in air is about four times as strong as when in water; and when the animal is touched on both surfaces by the same hand, the thumb being applied to one surface, and the middle finger to the opposite, the shock is much stronger than when the circuit is formed by both hands. The gymnotus electricus, or electrical eel, possesses all the electric properties of the torpedo, but in a superior degree. When small fish are put into the water wherein the gymnotus is kept, they are generally stunned or killed by the shock.

ELECTRICITY, HISTORY OF. It does not appear that the ancients had any thing more than an imperfect and partial knowledge of the electric fluid. Thales, the Milesian, who lived about six hundred years before Christ, was aware of the electrical property of amber, that when rubbed it would attract light bodies to itself; and Theophrastus observed that lyncurium or tourmalin possessed the same property; but beyond this there is no mention of the subject, either by this or any other writer, until the seventeenth century, when Dr. William Gilbert, a native of Colchester, published his treatise, 'De Magnete,' in which we find many important and interesting particulars. These received farther illustration from the experiments of Boyle, Otto Guericke, Dr. Wall, and some others, but more especially from Mr. Hawksbee, who, in his work on electricity, first noticed the electrical power in glass, and the light proceeding from it. He also first heard the snapping noise that accompanies excitation, and noticed the

different phenomena relating to electrical attraction and repulsion: besides, by introducing the glass globe into the electrical apparatus, he much facilitated his own experiments and those of others. After an interval of about twenty years, Mr. Stephen Grey added very materially to the science of electricity by numerous important experiments. He first showed how the power of native electrics might be communicated to other bodies in which it cannot be excited, by supporting them on silken lines, hair lines, cakes of resin, or glass. He also more accurately distinguished between electrics and non-electrics, and displayed the effect of electricity on water more clearly that Gilbert had done.

The experiments of Mr. Grey were elucidated and enlarged by M. du Fay, member of the Academy of Sciences at Paris. He observed that electrical operations were obstructed by great heat, as well as by a moist air; that all bodies, both solid and fluid, would receive electricity, when placed on warm or dry glass or sealing wax; that those bodies which are naturally the least electric have the greatest degree of electricity communicated to them by the approach of the excited tube. He first observed the electric spark from a living body suspended on silken lines, and established a principle first suggested by Otto Guericke, that all electric bodies attract others that are not so, and repel them as soon as they are become electric by the vicinity or contact of the electric body. He likewise distinguished electricity into two kinds, which he called vitreous, as belonging to glass, rock crystal, &c. and resinous, as applied to that of amber, gum lac, &c.; the former of these has since been called positive electricity, and the latter negative.

Mr. Grey resumed his experiments in 1734, the result of which was the discovery of conductors. He also concluded from several experiments that the electrical power was of the same nature as that of thunder and lightning. Desaguliers and other experimentalists in France, England, and Germany, followed up the experiments of Mr. Grey with further researches, which displayed the power of electricity in new forms, particularly by the discovery that if electricity be accumulated in a phial, it may be discharged again so as to occasion the electric shock. Mr. Van Kleist, of Leyden, first observed the property of the phial, and Cunæus followed it by exhibiting the experiment. Mr. Muschenbroeck, who also tried the experiment with a very thin bowl, assured M. Reaumur, in a letter, that he felt himself struck in his arms, shoulder, and breast, so that he lost his breath, and was two days before he recovered from the effects of the blow, and the terror which this unexpected result produced. He added, that he would not receive a second shock for the whole kingdom of France. M. Allemand made the experiment with a common beer glass, from which he found himself powerfully affected in his breath, and felt so severe a pain all along his right arm, that he apprehended serious consequences from it. These inconveniences, however, passed off after a few days, and others being induced to repeat the experiment, the practice of electricity became soon after common, and was, after a time, also applied to medical purposes. Machines of different forms were now invented, and the electrical apparatus was continually enlarged, by some new device, to increase the force or direct the operations of the electricity; among other things, when it was ascertained that lightning was no other than electrical matter, conducting rods began to be employed on the tops of buildings and on the masts of vessels, for the purpose of saving them from the effects of storms. Many important treatises on the science of electricity have been written within the last century, by Adams, Cavallo, Cavendish, Ferguson, Morgan, Van Marum, Van Swinden, &c.

ELECTRIFYING. The communication of electric matter to any body; when this is effected by means of a charged phial, it is called an electric shock.

ELECTROMETER. An instrument for measuring the quantity and determining the quality of the electricity in any electrified body.

ELECTROPHORUS. A machine consisting of two plates, one of which is a resinous electric and the other metallic. When the former is once excited by a peculiar application of the latter, the instrument will furnish electricity for a considerable time. This is one of the ingenious contrivances devised by Professor Volta, about the year 1774, which may serve as a good substitute for the electrical machine. When properly constructed, it has been known to retain its electricity for three weeks.

ELECTUARY (in Pharmacy.) A medicinal composition, in which honey or sirup forms a necessary ingredient.

ELEGIAC VERSE. A sort of verse used in elegies.

ELEGY. A plaintive kind of poetry, or a funeral song.

ELEMENTS (in Chymistry.) The first principles of which bodies were supposed by the ancients to be composed; these were fire, air, earth, and water. In modern chymistry no such elementary principles are admitted, because it is considered that all bodies either are or may be decomposed, and that these supposed elements are compounds: fire is composed of caloric and light; air of caloric, oxygen and azotic gases; water of oxygen and hydrogen; and the earth includes various different substances.

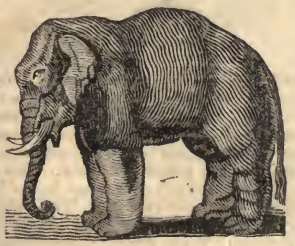
ELEMENTS (in Geometry.) The infinitely small parts of a right line, curve, or solid.

ELEMENTS (in Science.) The first principles of any science.

ELEMENTS (in Divinity.) The bread and wine prepared for the sacrament of the Lord's supper.

ELEMENTS (in Grammar.) The letters of the alphabet, which are the elements of language.

ELEPHANT, the largest quadruped now in existence, and very numerous in Asia and Africa, where they are trained to useful labour, and among the native princes are still used in war. They live from 300 to 400 years, and are scarcely at maturity till 100. They are extremely sagacious, and perform with their proboscis almost every thing that man can perform with his hands. They live on vegetables, and are docile and friendly, but when enraged are very terrible. They are conducted by a man who sits on their neck, and employs as a weapon an iron rod, hooked at the end, with which he pricks the animal to urge him forward, or turn him in any direction that may be required. Almost all the articles which are transported from place to place in India are conveyed by elephants.



ELEVATION (in Astronomy.) The height of the equator, pole, or star, &c. above the horizon.

ELEVATION (in Architecture.) A draught or description of the face or principal side of a building, which, in common language, is called the upright.

ELEVATION (in Gunnery.) The angle which the chase of a cannon or mortar makes with the plane of the horizon.

ELEVATION OF THE HOST (in the Romish Church.) That part of the ceremony of the mass which consists in the priest's raising the host above his head for the adoration of the people.

ELF. A wandering spirit supposed to be seen in unfrequented places.

ELGIN MARBLES. Curious marbles brought by the Earl of Elgin out of Greece, and deposited in the British Museum.

ELISION (in Grammar.) The striking out a vowel at the end of a word, as 'th' arch,' for 'the arch.'

ELIXIR. A very powerful tincture. The Grand Elixir is another word for an all-powerful medicine.

ELK. A large species of stag; once common in Ireland, where its bones and horns are often found in the bogs. Numerous in some parts of North America.

ELL. A measure of length, different in different countries. The English and Flemish ells are the most used: the former of which is three feet nine inches, or one yard and a quarter; the latter only three quarters of a yard.

ELLIPSES, or ELLIPSE. A curve which cuts the cone obliquely through both sides. It is vulgarly called an oval, as in the subjoined

figure, A H B I, where A B is the transverse diameter, H I the conjugate diameter.

ELM. A sort of tree which grows to a very great height, and thrives best in a rich black earth. The timber of elm is next to that of oak for value.

ELOCUTION (in Rhetoric.) The adapting words and sentences to the things or sentiments to be expressed. It consists in apt expressions, the happy order in disposing the words, and a certain musical cadence which arises from the whole.

ELONGATION (in Astronomy.) The removal of a planet to the farthest distance it can be from the sun, as it appears to an observer on the earth.

ELOPEMENT (in Law.) The voluntary departure of a wife from her husband to go and live with an adulterer; in common acceptation, the secret departure of any female with her lover.

ELYSIAN FIELDS. The paradise of the heathens.

EMANCIPATION. A deliverance from slavery or servitude; also, the release of the Roman Catholics from the disabilities which excluded them from office in England.

EMBALMING. The filling a dead body with spices, gums, and other antiseptics, to prevent it from putrifying. The Egyptians practised this art most successfully, so that bodies which they embalmed two thousand years ago remain whole to this day.

EMBARGO (in Commerce.) A prohibition issued by authority on all shipping, not to leave any port.

EMBER DAYS. Particular days of fasting and humiliation in the Ember weeks.

EMBER WEEKS. Four seasons in the year more particularly set apart for prayer and fasting, namely, the first week in Lent, the next after Whitsuntide, the fourteenth of September, and the thirteenth of December.

EMBEZZLEMENT. The appropriating a thing to one's own use, which has been intrusted to one.

EMBLEM. A kind of painted enigma, or certain figures painted or cut metaphorically, expressing some action.

EMBOSSING. A sort of sculpture or carving, where the figure is protuberant, and projects from the place in which it is cut.

EMBRASURE (in Architecture.) An enlargement made in a wall.

EMBRASURE (in Fortification.) A hole in a parapet for the reception of a gun.

EMBROCATION. A kind of stimulating fomentation.

EMBROIDERY. Figured work wrought on silk, cloth, or stuffs.

EMBRYO. The fœtus, or child in the womb. The first rudiments.

EMENDATION. An alteration made in the text of any book by verbal criticism.

EMENDATION (in Law.) The correction of abuses.

EMERALD. A precious stone of a green colour, and next in hardness to the ruby.

EMERSION (in Astronomy.) The re-appearance of the sun and moon after they have undergone an eclipse; also of a star, that emerges from under the rays of the sun.

EMERY. A sort of iron ore, of a grayish-black colour, so very hard as to scratch topaz, and not to be frangible. It consists of alumina, silica, and iron, and is used in the form of a powder for polishing hard minerals and metals.

EMETIC. A medicine for emptying the stomach by vomiting, generally ipecacuanha, or tartarized antimony.

EMIGRANT. A person removing from his native country to reside in some foreign land.

EMIR. A title of dignity among the Saracens and Turks.

EMISSARY. A secret agent sent to sound the sentiments and designs of another.

EMMET. An ant or pismire.

EMOLLIENTS. Softening medicines.

EMPALEMENT. A barbarous punishment of eastern tyrants, by driving a stake through the body.

EMPALEMENT (in Botany.) The flower cup, or the green leaves which cover the flower.

EMPANNEL. The writing the names of a jury into a small pannel or parchment, or making out a list of such as are to be summoned to serve on a jury.

EMPEROR. Among the Romans, imperator, or commander, a title of political dignity assumed by Augustus and his successors; now a sovereign prince who bears rule over large countries.

EMPIRIC. Literally, a trier or experimenter; particularly, one who, without regard to the rules of science, makes experiments with medicines; a quack.

EMPORIUM. A common resort of merchants for trade.

EMPYREUMA. The peculiar smell of burnt substances in distillation.

EMULSION. A medicinal drink.

ENAMEL (in Anatomy.) The fine exterior covering of the teeth.

ENAMEL (in Painting.) A composition of mineral colours, formed from metallic oxide, and used in potteries.

ENAMELLER. One who professes the art of painting with enamel colours.

ENCAMPMENT. The pitching of tents or disposing an army in an open country.

ENCHANTMENT. Magical charms practised for purposes of fraud.

ENCHASING. The beautifying gold, silver, and other metal works, by figures. It is practised only on hollow thin works, as watch-cases, caneheads, and the like. It is performed by punching or driving out the metal to form the figure, so as to stand out prominent from the surface of the metal.

ENCHYRIDION. A manual or small volume.

ENCLOSING. The parting off of common grounds into distinct possessions.

ENCORE. Literally, again; to be repeated, as applied to any song or performance in a theatre.

ENCROACHMENT (in Law.) An unlawful gaining upon the rights and possessions of another.

ENCYCLOPÆDIA. A dictionary which professes to explain the whole circle of the sciences.

ENDEMIC. An epithet for disorders to which the inhabitants of particular countries are subject.

ENDIVE. An herbaceous plant, a sort of succory, used as a vegetable for the table.

ENDORSING. Writing a name on the back of a bill of exchange, or check, by which responsibility for its amount is incurred, if duly presented, not paid, and early notice given.

ENDOWMENT (in Law.) The giving or assuring a dower to a woman; also the assigning certain rents and revenues for the maintenance of a vicar, almshouses, &c.

ENFRANCHISEMENT (in Law.) The making a person a denizen, or free citizen.

ENGINE (in Mechanics.) A compound machine, consisting of one or more mechanical powers, as of screws, levers, pulleys, &c. in order to raise, cast, or sustain any weighty body.

ENGINEER (Military.) One whose office is to conduct the attack and defence of all fortresses.

ENGINEER (Civil.) One who superintends public improvements, as road and canal making, embankments, construction of harbours, docks, and bridges.

ENGLISH, or the ENGLISH LANGUAGE. A compound of the original British or Welsh, the Anglo-Saxon, Norman, French, Latin, and Greek, which is now spoken not only in all parts of Great Britain, but throughout North America and all the English colonies in different parts of the habitable globe.

ENGLISHMAN. A native of England, the southern division of the island of Great Britain, lying between latitude 50° and 55°, and extending over 6° of longitude; divided into 40 shires, or counties, which contain above 10 millions of inhabitants, remarkable for their industry, personal vigour, beauty, and general intelligence. Situate in the middle of the temperate zone, its climate is well adapted to the human constitution, and, though variable, little subject to destructive commotions, while it contributes to the multiplication of all the substantial necessaries of life, which the securities of trial by jury, and the representative system, enable the people to enjoy. There are 42 millions of acres in England, and 65 millions in Great Britain.

ENGRAVING. The art of representing figures in metal, wood, or stone, by means of lines cut thereon.

ENGRAVING, History of. Engraving, as far as regards the representation of figures or characters on metal, stone, or wood, was one of the first arts on which human ingenuity was exercised. Moses speaks of the art of engraving, as no new invention. The tables which God delivered to Moses are said to be the work of God, and the writing was the writing of God engraved upon the tables. The first engravings of human workmanship mentioned in the Scriptures, were executed by Aholiab and Bezaleel, for the decoration of the tabernacle and the ornaments for the dress of Aaron. It is also said that the tables of Seth contained the astronomical discoveries of that patriarch and his sons. In process of time we find that the clasps, buckles, rings, and other ornamental parts of dress, as also the cups and other household furniture, together with the arms of military chieftains, were probably enriched with the first specimens of engraving. The shields of the Carians, as described by Herodotus, were ornamented with rude portraitures, as were also those of the ancient Celtic nations; but the hieroglyphic figures of the Egyptians afford the best and earliest specimens of engraving properly so called. The Phœnicians probably learned this art from the Egyptians; and their coins, which are looked upon to be among the most ancient extant,

prove, as Mr. Strutt observes, that they were by no means indifferent artists. It is, however, generally supposed, that there are no remains in antiquity, either in sculpture, painting, or engraving, prior to those of Etruscan original. Some of those which are preserved in the British Museum are exceedingly rude, and evidently executed with the graver only upon a flat surface, and if filled with ink and run through a printing press, provided the plate would endure the operation, might produce a fair and perfect impression.

The art of engraving on their shields was practised by the Saxons, in common with the other northern tribes. Alfred the Great encouraged this among the other arts, and the works of the Saxon artists, as their shrines and caskets, rose by his encouragement and that of his successors, considerably in estimation not only in England, but on the continent. Strutt mentions a curious remnant of antiquity in the Museum at Oxford, namely, a very valuable jewel, made of gold, and richly adorned with a kind of work resembling filagree, in the midst of which is seen the half figure of a man, supposed to be Saint Cuthbert. The back of this jewel, which was engraved by command of Alfred, is ornamented with foliage very skilfully executed. Saint Dunstan, the celebrated archbishop of Canterbury, who died A. D. 988, is also noted for his skill in the arts. Osborn, his biographer, enumerates among his other endowments that he could 'scalpello imprimere ex auro, argento, ære, et ferro.'

After the conquest, it appears that engraving, which had hitherto been mostly followed in conjunction with the sister arts of carving and chasing, was now followed as a distinct art, and carried to a higher state of perfection, as may be learned from the brass plates so frequently to be met with in the churches or on the tombstones in the fourteenth and following centuries. These are usually ornamented with the effigies of the person to whose memory they are dedicated, and are evidently executed by the graver only; the outlines being first made, then the shadows are expressed by strokes strengthened in proportion as they required more force, and occasionally crossed with other strokes a second or third time, precisely in the same manner as copperplate is at present engraved for printing. Thus we see that the art of engraving was for a long time practised before it was made to answer the noble purpose of perpetuating the labours of the painter.

That branch of the art of engraving which consists in taking impressions on paper was, according to Giorgio Vasari, first practised by the Italians, and took its rise from an accident. One Maso Finiguerra, an ingenious goldsmith and sculptor of Florence in the fifteenth century, used to design and emboss figures on gold and other metals, and before he inlaid them he used to fill the engraving with earth, and cast melted sulphur on it, which gave it a sort of olive colour, after which, pressing a piece of damp paper on it with a smooth wooden roller, the engraving on the metal remained imprinted on the paper, just as if it had been designed with a pen, in consequence of which Andrew Mantegna set about making regular prints from his engravings. The correctness of this story, however, as far as regards the priority of the discoverer, is disputed by Strutt and others.

It should seem that impressions from engravings on wood had been taken in Germany prior to this, and that the brief malers, or the makers of playing cards, practised the art of cardmaking about the fifteenth century, and from the making of cards were led to the execution of other figures of a devout nature, so as to form a kind of books containing a history of the Old and New Testament, which was printed only on one side of the paper. In this manner the engraving both in wood and brass continued to be followed by the same artists, and in their hands made great advances to perfection. Martin Schoen, of Culmbach, was one of the first who distinguished himself in this art. Israel von Mecheln, of Mechelen, was the rival of Schoen; the style of which latter artist was followed by Albert Durer. After this arose a succession of distinguished engravers in France, England, and Holland.

Engraving in chiaro-scuro is justly ascribed to the Germans, and was first practised by Muir. At what time etching was introduced is not known. One of the most early specimens of a print, by Albert Durer, is known by the name of the Cannon, dated 1518.

Engraving with dots was of Italian invention, and was first practised by Agostino de Musis. The method of engraving in mezzotinto was commenced about the middle of the seventeenth century. Engraving in aquatinta is a recent invention.

ENGROSSING. The writing any thing fair in a large hand.

ENIGMA. An obscure problem.

ENLISTING. The entering for a soldier for a certain stipulated time.

ENNEANDRIA (in Botany.) One of Lin-

næus' classes of plants, including such as bear hermaphrodite flowers, with nine sta-

mens, as the bay, the cashew nut, the flowering rush, &c.

ENNUI. Listless fatigue.

ENSIGN. The banner under which the soldiers are ranged, according to the different regiments to which they belong; also, the officer who carries the ensign or colours.

ENTABLATURE. That part of a column which is over the capital, comprehending the architrave, frize, and cornice.

ENTAIL. An entailed estate, or an estate abridged and limited by certain conditions prescribed by the first donor.

ENTERTAINMENT. A species of theatrical representation following a tragedy or comedy; it may be either a farce or a pantomime, &c. In social life, a dinner or supper of a party of friends.

ENTHUSIASM. Energy of feeling, and the foundation of all great and successful exertions. Sometimes applied to zeal without knowledge.

ENTOMOLGY. The science which treats of insects, as to their structure, habits, and varieties. The body of an insect consists of four principal parts, namely, the head, the trunk, the abdomen, and the limbs or extremities. The head is furnished in most insects with eyes, antennæ or horns, and a mouth. The eyes are various, both in colour, shape, and number, in different kinds, some being of a different colour from that of the head, and some of the same colour, some placed close together, or almost touching each other, some having the pupil glassy and transparent, others having it scarcely distinguishable. Many insects have, besides the large eyes, also three small spherical bodies placed triangularly on the crown of the head, called ocelli, or stemmata. The antennæ are two articulated moveable processes, placed on the head, which are also subject to great variety in their form and structure, being setaceous, or bristle shaped, filiform, or thread-shaped, &c. The mouth in most insects is situated in the lower part of the head, and consists of the lips, upper and lower; the mandibles, or horny substances, one on each side of the mouth; the maxillæ, or jaws, two membranaceous substances, differing in figure from the mandibles, under which they are situated; the tongue, an involuted tubular organ, which constitutes the whole mouth in some insects, as the sphinx; the rostrum, beak or snout, a moveable articulated member in the grasshopper, the aphis, &c.; the proboscis, or trunk, which serves as a mouth in the house fly, bee, and some other insects; the feelers, small moveable filiform organs, placed mostly on each side the jaw, and resembling the antennæ, but much smaller; these vary in number from two to six in different insects.

The trunk, which is the second general division of which an insect consists, comprehends that portion situated between the head and the abdomen. This consists of the thorax, or upper part of the body, to which the first pair of legs is attached; the breast, or under part of the thorax, to which the four posterior feet are attached; the breast bone, a ridge running under the breast, which is conspicuous in some insects; and the scutellum, or escutcheon, a lobe-like process, situated at the posterior part of the thorax.

The abdomen, or third principal portion of an insect's body, is composed of annular joints, or segments, which vary in form and number in different insects; this is distinguished into the back, or upper part, and the belly, or under part. The motion of the abdomen is most visible in the fly and bee tribes. To this division belong also the tail and the sting. The tail sometimes spreads like a leaf, as in the cockroach; and in other insects is bristle-shaped. The sting, which is peculiar to insects of the bee tribe and some few others, is sometimes simple, having but one dart, and sometimes compound, having two darts. In bees and wasps the sting is retractile, that is, capable of being drawn in; but in other insects it is almost always hid in the body, or seldom thrust out. In some tribes of insects it exists in the males, in others in the females only, but seldom in both sexes.

The members or extremities of insects are the legs and the wings. Insects have sometimes six legs, but never more, except what are observable in the larvæ, which are termed spirious feet. The feet vary in their form and use, being formed either for running, swimming, or leaping, with or without claws or spines, &c. The wings are mostly two, but sometimes four in number; mostly placed on each side the insect, so as that each pair should correspond in situation, form, &c.; but where there is more than one pair, the first are mostly larger than those behind. The wings are greatly diversified as to form, figure, texture, construction, &c. To the wings belong also the elytra, or wing cases, and the halteres, or poisers. The elytra are two coriaceous wings, which are expanded in flight, but when at rest serve to cover the abdomen and enclose their membranaceous wings, as in insects of the beetle tribe; the poisers are two globular bodies placed on slender stalks behind the wings in the tribe of winged insects, so called because they are supposed to keep the insect steady in its flight.

The internal parts of insects are less perfect and distinct than those of larger animals, and of course less known. The brain of insects is altogether different from the substance which bears that name in other animals, being little more than ganglions of nerves, two in number, that are observed in the crab, lobster, &c. The muscles consist of fasciculi of fibres, that serve apparently the office of producing two motions, namely, that of extending and that of bending. Some insects

appear to be furnished with some floating vessels, which secrete a fluid varying in colour in different tribes, but very similar to saliva. The œsophagus, or organ of deglutition, is a straight short tube, consisting of annular muscular fibres, like the proboscis of the common fly.

The organs of digestion vary very much in different tribes of insects. Most have a single stomach, but some have it double, and others have a manifold stomach. In bees the stomach is membranaceous, fitted to receive the nectar of flowers: the bug, the boat fly, and such as feed on animal substances, have a muscular stomach. The beetle, ladybird, earwig, and some others that feed on other insects, have a double stomach, the first of which is muscular, after the manner of a gizzard, and the second is a membranaceous canal. Insects such as the cricket and grasshopper, which have many stomachs, seem to employ them much after the manner of the ruminating animals.

Instead of organs of respiration, it has been found that they have spiracula running on each side the body that serve for the reception of the air, and other vessels proceeding from these that serve for the expiration of air. Insects, among the ancients, were reckoned to be bloodless animals; but it has since been ascertained that the process both of circulation and secretion goes forward in the bodies of insects, although in a different manner. The process of secretion is supposed to be performed by means of a number of long slender vessels, which float in the internal cavity of the body, serving to secrete different fluids, according to the nature of the animal; thus the bee, wasp, sphinx, &c. have two vessels situated at the bottom of the sting, through which they discharge an acrid fluid. From the ant is extracted an acid well known to chymists, and other insects have other fluids peculiar to themselves. As to the process of circulation in insects, little more is known at present than that a contraction and dilatation of the vessels is observable in some kinds, particularly in caterpillars; but the fluid which is supposed to supply the place of blood is not of the same colour.

The sexes in insects are of three kinds, namely, the males, the females, and the neuters, which have not the usual marks of either sex. The sexes are distinguished by the difference of size, brightness of colours, form of the antennæ, &c.; the male is always smaller than the female, and in some cases the female is several hundred times bigger than the male; on the other hand, the males have brighter colours and larger antennæ. In many cases the females have no wings; and in some instances, as that of the bee, the female has a sting, but the male none.

The metamorphoses of insects is one characteristic of these animals which distinguishes them from all others. In most insects the egg is the first state; but there are examples of viviparous insects, as in the case of the aphis, the fly, &c. The insect in the second or caterpillar state, is now called the larva, but formerly the eruca. The larvæ differ very much in different insects; those of the butterfly and moth are properly called caterpillars, those of the flies and bees are called maggots. The larvæ of the beetle tribe differ from the complete insect only by being destitute of wings. Butterflies, in their caterpillar state, are very voracious, but in their complete state they are satisfied with the lightest and most delicate nutriment. The third state into which insects transform themselves is the pupa, or chrysalis. In most of the beetle tribe the pupa is furnished with short legs, but the pupa of the butterfly tribe is without legs: that of the fly tribe is oval, but that of the bee tribe is very shapeless. The last and perfect state of insects is called by Linnæus the imago, in which state it continues until its extinction. The life of insects varies as to its duration. Some, as bees and spiders, are supposed to live for a considerable time; but others will not live beyond a year, a day, or some hours, in their perfect state, although they will continue for some time in their larva state. Water insects generally live longer than land insects.

As to the classification of insects, it suffices here to observe, that Linnæus, whose system is now generally followed, has classed them according to their wings into seven orders, namely, 1. Coleoptera, or such as have shells that cover the wings, as the beetle tribe. 2. Hemiptera, or half winged insects, as the cockroach, locust, grasshopper, bug, &c. 3. Lepidoptera, or scaly winged insects, as the butterfly and the moth. 4. Neuroptera, or nerve-winged or fibre-winged insects, the wings of which are furnished with conspicuous nerves, fibres, or ramifications, as the dragon fly, May fly, trout fly. 5. Hymenoptera, or insects with four wings and a sting, as the bee, wasp, hornet, termes, or white ant, &c. 6. Diptera, or two-winged insects, as the gnat, common fly, musquito, horseleech, &c. 7. Aptera, or insects without wings, as the spider, flea, lobster, scorpion, &c.

ENTOMOLOGY, History of. There are scattered notices respecting insects at an early period, from which we may infer that they had not escaped the notice of inquirers into the animal kingdom. Among the books of Solomon now lost to the world, it is recorded that he treated on insects, or creeping things. Hippocrates wrote a work on insects, from which Pliny has given some few extracts. The labours of Aristotle on this subject are still extant, and show that he had made insects his particular study. What he has written on this subject has not been surpassed in accuracy by any thing that has followed. Nicander, Callimachus, and above all

Theophrastus, are mentioned as writers on insects; but there is no work extant on that subject before the time of the Romans. Virgil treats on the subject of bees, which were much cultivated in his time. Pliny has devoted the eleventh book of his Natural History to this subject, and mentions several Latin writers who had directed their attention to it. Ælian, in his work on animals, devotes several chapters to particular insects, as the spider, scorpion, cricket, &c.; besides that, the subject is slightly touched upon by the medical writers, Ætius, Paulus Ægineta, Trallian, and Oribasius, and also by the Arabian authors Rhazes, Avicenna, Avenzoar, and Averrhoes. From the twelfth to the fifteenth century, no writer of any note occurs on the subject of entomology. Albertus Magnus has devoted some small part of his work De Animalibus to this subject. Agricola, in his work de Animantibus Subteraneis, which appeared in 1549, has given the first systematic arrangement of insects, by dividing them into creeping insects, flying insects, and swimming insects. This work was followed in the same century by Dr. Wotton's work, De Differentiis Animalium, and cursory remarks on insects in Rondeletius, Libri de Piscibus Marinis, and in Conrad Gesner's work, De Serpentium Natura.

A far more important production on the subject of insects appeared in 1602, from the pen of that industrious naturalist Aldrovandus, entitled De Animalibus Insectis, in which he divided them into two classes, terrestria and aquatica, and subdivided them into orders, according to the number, nature, position, &c. of their wings. This work was followed by the Historia Animalium Sacra of Wolfang Frenzius, and other works from the pen of Fabius Columna, Hoefnagle, and Archibald Simpson. This latter work is entitled to notice, because it was the first work on entomology that had appeared in Britain.

The graphic art was also called into aid about this period, to illustrate the subject of entomology, as appears from the works of the celebrated engravers Hoefnagle, Robert Aubret, De Bry, Vallet, Robin, Johnston, &c. The invention of the microscope also afforded great facilities to the study of entomology, and enlarged the sphere of observation very considerably. Of these facilities many naturalists amply availed themselves, as Hooke, Leuwenhoek, Hartsoeker, and others. The latter writer discovered the circulation of the fluids in insects. Christopher Marret published, in 1667, a work containing an account of British insects; and a particular description of the tarantula was published about the same time by Wolferdus Sanguerdius; but the most important work on this subject was Swammerdam's General History of Insects, which displayed an anatomical knowledge of these animals that raised the reputation of this writer very high. This appeared in 1669, and in 1678 Lister's valuable History of English Spiders; the year following the first part of Madame Merian's extensive work on the metamorphoses of lepidopterous insects, which was followed by other parts in 1683, 1718, and 1726, which last is a splendid performance on the insects of Surinam. Leuwenhoek also, about the same time, added materially to the stock of entomological knowledge, by giving an account of the anatomy of insects, drawn from microscopical observations. Ray published, in 1710, his Historia Insectorum, which was the joint labour of himself and his friend Willoughby. In this history insects are divided into the transmutabilia and intransmutabilia. The transmutabilia are divided into four orders, namely, vaginipennes, those which have wings covered with a sheath; papiliones, the lepidopterous insects; quadripennes, four winged insects; and bipennes, two winged insects: which are again subdivided into families. In 1735, the system of Linnæus was published, which has since been universally adopted. It consisted at first of four orders, which he afterwards increased to the number of seven. Some writers, as Deger, Reitzius, and Fabricius, have attempted to improve upon the Linnæan system, but their alterations have not been admitted.

As to the history of insects, many naturalists since his time have contributed their share to the stock of information, either by the description of the insects in particular parts, or by the description of insects generally. In 1753, appeared the Entomologia Carniolica of Scopoli; in 1769, Birkinfront published Outlines of Natural History of Britain; in Seward's Natural History is given an account of many exotic insects. In 1770 were published Illustrations of Natural History; in 1775 Fabricius published his Systema Entomologiæ; and within the last few years we have had Donovan's Natural History of British Insects, in 15 vols.; Lamarck's Systeme des Animaux sans vertebres; Marcham's Entomologia Britannica, and Kirby's Monographia Apium Angliæ.

ENTRY (in Commerce.) The act of setting down in merchant's account books the particulars of trade.

ENTRY (at the Custom House.) Passing bills through the hands of the proper officers.

ENTRY (in Law.) The taking possession of lands.

ENVIRONS. The country lying round a large town or city.

ENVOY. A person in degree lower than an ambassador, sent on some particular occasion from one government to another.

ENVY. The poison of society engendered by the unworthy, and administered to the worthy in detraction, slander, falsehood, and active mischief, serving as the foundation of most of the bad passions, by which men embitter the lives of one another.

EPACT (in Chronology.) A number arising from the excess of the common solar year above the lunar, by which the age of the moon may be found every year.

EPAULET. The shoulder knot worn by a soldier or footman.

EPAULMENT. A work raised to cover sidewise, made of earth, gabions, &c.

EPHEMERAL. Beginning and ending in a day; an ephemeral insect lives but for a day, as the day-fly.

EPHEMERIS. An astronomical almanack or table, showing the present state of the heavens for every day at noon.

EPHOD. A garment worn by the priests of the Jews.

EPIC POEM. A narrative poem formed upon a story partly real and partly fictitious, the subject of which is always some hero or distinguished person; as Homer's Iliad and Odyssey. Virgil's Æneid, Tasso's Jerusalem Delivered, Milton's Paradise Lost, Voltaire's Henriade, and Glover's Leonidas.

EPICENE (in Grammar.) An epithet for the gender of such words as are common to both sexes, as in the Latin, hic et hæc parens.

EPICUREAN PHILOSOPHY. The doctrine taught by Epicurus, that the universe consisted of atoms or corpuscles of various forms, magnitudes, and weights, which, having been dispersed at random through the immense space, fortuitously concurred into innumerable systems. To this scheme of infidelity he added the notion that happiness consisted in sensual indulgence, particularly in the pleasures of the table.

EPICUREANISM, or EPICURISM. The doctrine of Epicurus: the practice of an epicurean or epicure, or of one who is addicted to his sensual gratifications.

EPICYCLE. A little circle that is in the centre of a greater circle.

EPIDEMIC DISEASES. Such as prevail at particular seasons, and spread among the inhabitants of a country.

EPIDERMIS (in Anatomy.) The cuticle or scarf skin, that which rises in a blister.

EPIGRAM. A short, witty, pointed poem.

EPIGRAPH. An inscription on a building, stone, &c.

EPILEPSY, or the FALLING SICKNESS. A convulsion of the whole body, with a privation of sense.

EPILOGUE (in Dramatic Poetry.) A speech addressed to the audience when the play is ended.

EPILOGUE (in Rhetoric.) The conclusion of a speech, a recapitulation of the whole.

EPIPHANY, vulgarly called TWELFTH DAY. A festival of the Episcopal church, celebrated on the twelfth day after Christmas, in commemoration of the manifestation made to the Gentiles of our Saviour's nativity.

EPISCOPACY. A form of church government by bishops.

EPISCOPALIAN. One who supports episcopacy.

EPISODE (in Poetry.) A separate incident or story, which the poet introduces into his narrative as connected with the principal action.

EPITAPH. An inscription on a tomb-stone

EPITHALAMIUM. A song sung at weddings.

EPITHET. A word expressive of a quality.

EPITOME. An abridgment or short draught of a book.

EPOCH, or EPOCHA. A term or fixed point of time, whence years are numbered, such as the Creation, 4004 B. C.; the Taking of Troy, 1184 B. C.; the Building of Rome, 753 B. C.; the birth of our Saviour, the commencement of the Christian era, and the Hegira, or the flight of Mahomet from Mecca, A. D. 622.

EPODE (in Lyric Poetry.) The third or last part of the ode.

EPOPŒIA (in Poetry.) The fable or subject of an epic poem.

EPSOM SALTS. Sulphate of magnesia, formerly procured by boiling down the mineral water from the spring at Epsom, but now prepared from sea water. They are used as an aperient.

EQUABLE. An epithet for uniform motion, &c.

EQUALITY. A term of relation between things the same in magnitude, quantity, or quality.

EQUATION (in Algebra.) An expression in which two quantities differently represented are put equal to each other by means of the sign of equality, as $7ax+3x=b$.

EQUATION, or the EQUATION OF TIME (in Astronomy.) The difference between mean and apparent time, or the reduction of the apparent unequal time or motion of the sun, &c. to equable time or motion.

EQUATION, or EQUATION OF PAYMENTS (in Arithmetic.) A rule for finding a time when if a sum be paid which is equal to the sum of several others due at different times, no loss will be sustained by either party.

EQUATOR. A great circle on the terrestrial sphere, equidistant from the pole.

EQUATORIAL, or PORTABLE OBSERVATORY. An instrument by which most of the problems in astronomy may be performed.

EQUES AURATUS. A knight, so called because none but knights were allowed to gild their armour.

EQUESTRIAN. One on horseback.

EQUESTRIAN ORDER. The second rank in Rome, next to the senators.

EQUESTRIAN STATUE. The representation of a person mounted on a horse.

EQUIANGULAR. Having equal angles.

EQUIDISTANT. At an equal distance.

EQUILATERAL. Having equal sides.

EQUILIBRIUM. An equal balance or equality of weight and poise, as when two ends

of a lever hang so even as to poise neither way.

EQUIMULTIPLES (in Arithmetic or Geometry.) Numbers and quantities multiplied by one and the same number and quantity, as 12 and 6, which are equimultiples of 4 and 2, called their submultiples.

EQUINOCTIAL, or EQUINOCTIAL LINE. A great circle of the celestial globe, answering to the equator on the terrestrial globe. Whenever the sun comes to this circle the days and nights are equal all over the globe.

EQUINOXES. The times when the sun enters the first points of Aries and Libra, that is, about the twenty-first of March and the twenty-first of September, when the days and nights are equal all over the world.

EQUIPAGE (among Travellers.) Whatever is necessary for a voyage or journey, as, horses, attendants, attire, &c.

EQUIPAGE (in Military Affairs.) Whatever is necessary for an army on its march, as, tents, baggage, kitchen furniture, &c.

EQUIPOLLENCE. Equality of force and power; as, equipollent propositions, such as have the same meaning, though differently expressed.

EQUITY (in Law.) A correction of the common law, wherein it is deficient.

EQUITY, Court of. A title given by way of distinction to the Court of Chancery, in which the rigour of other courts is moderated, and controversies are supposed to be determined according to the exact rules of equity and conscience.

EQUIVOCAL. An epithet for words which have a double meaning, and may be applied equally well in both.

EQUIVOCATION. The use of equivocal terms, which may be understood by the hearer in a different sense from that in which they are taken by the speaker.

EQUULEUS. An old constellation, having from four to six stars.

ERA. See Æra.

ERIDANUS. A constellation in the southern hemisphere, containing, according to different authors, from nineteen to eighty-four stars.

ERMINE. A little animal, about the size of a squirrel, the fur of which, bearing the same name, is very valuable. This animal is white all over, except the tip of the tail, which is black. It is a remarkable circumstance, and one that affords us a very pleasing proof of the wisdom of Providence, that at the commencement of winter these and other defenceless animals change their darker summer coat to one similar in colour to the snows of that inclement season. By such means they are able to elude the sight of many of their enemies, to the attacks of which they would otherwise be peculiarly exposed. Ermines, like all other animals of the same tribe, are carnivorous, and very destructive to such quadrupeds as they are able either openly to attack, or to seize by stratagem. They are chiefly found amongst woods, in hedge-banks, hollow trees, heaps of stones, and the banks of rivers.

ERMINE (in Heraldry.) A fur used in coat armour, and supposed to represent the linings and doublings of mantles and robes. It is represented by a white field powdered or semé with black spots.

ERRATUM. An error of the press; in the plural, Errata, errors of the press.

ERRATIC. Wandering, not fixed.

ERUPTION (in Medicine.) A breaking forth in a morbid manner, as spots on the skin.

ERUPTION (in Mineralogy.) The breaking forth of fire, ashes, stones, &c. from a volcano.

ERYSIPELAS, vulgarly called Saint Anthony's Fire. A disorder in the skin, which consists in a swelling, with redness, heat, and pain.

ESCALADE. A term applied to the scaling of the walls of a fortification, by filling up the ditches with bundles of faggots, called fascines, and entering by ladders; a mode of attack much adopted in the late wars, but accompanied, when successful, with great mutual slaughter, and, when unsuccessful, with the general destruction of the assailants.

ESCALOP SHELLS. The shells of escalops, a sort of fish, which are regularly indented.

ESCAPE (in Law.) A violent or privy evasion out of some lawful restraint.

ESCAPEMENT. See Scapement.

ESCARBUNCLE. See Carbuncle.

ESCHEAT. Lands or profits that fall to a lord within his manor, either by forfeiture or the death of the tenant.

ESCHEATOR. An officer formerly appointed to make inquests of titles by escheats.

ESCORT. A company of armed men, attending by way of distinction or protection.

ESCULENT. A plant that may be eaten.

ESCUTCHEON, or SHIELD. The representation of the ancient shields used in war, on which armorial bearings are painted.

ESPALIER. A low branching fruit tree, having the branches trained to a frame.

ESPIONAGE. A system of employing spies either in military or political affairs.

ESPLANADE (in Fortification.) The sloping of the parapet of the covered way towards the campaign.

ESQUIRE. Anciently, the person that attended a knight in time of war, and carried his shield; now, a title of honour given to the sons of knights, officers of government, counsellors at law, &c.

ESSAY. A short discourse or treatise on some subject.

ESSAYIST. A writer of essays, of which there have been many in England, as Addison, Steele, Swift, Pope, Johnson, Hawkesworth, Goldsmith, Mackenzie, &c. whose works have been collected under the name of the British Essayists.

ESSENCE (in Chymistry.) The purest and subtlest parts of a body, drawn by means of fire, &c.

ESSENTIAL OILS. Acrid, volatile oils, having a strong aromatic smell, which are drawn from plants by distillation, in distinction from native oils procured by coction.

ESSOIN (in Law.) An excuse by reason of sickness or any other just cause for one that is summoned to appear and answer an action, &c.

ESTABLISHMENT (in Military Affairs.) The quota of officers and men in an army.

ESTABLISHMENT (in Trade.) The stock, capital, &c. which are essential for carrying on a business.

ESTAFETTE. A military courier, sent from one part of an army to another.

ESTATE (in Law.) The title or interest a man has in lands or tenements.

ESTATES OF THE REALM (in Law.) The distinct parts of any state or government, as the King, Lords, and Commons, in England.

ESTIMATE. A calculation of the expenses of any undertaking, made according to the regular charges of trade, as the estimate of builders, engineers, printers, publishers, &c.

ESTOPPEL. An impediment or bar to an action.

ESTRAY. A tame beast found without any owner known.

ESTREAT (in Law.) The copy of an original writing, particularly of the penalties or fines to be levied by the bailiff or other officer, of every man for his offence.

ESTUARY. The mouth of a lake or river, or any place where the tide comes.

ETC. or &c. i. e. ET CÆTERA. Literally, And other things not mentioned.

ETCHING. A method of engraving, in which the lines and strokes are eaten in with aquafortis.

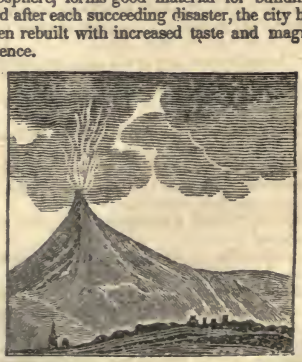
ETERNITY. With respect to God, a duration without beginning or end. As it is the attribute of human nature, it is a duration that has beginning, but will never have an end. "It is a duration," says a lively writer, "that excludes all number and computation; days, months, and years, yea, and ages, are lost in it, like drops in the ocean. It is a line without end! it is an ocean without a shore! it is an infinite, unknown something, which neither human thought can grasp, nor human language describe!"

ETHER. The lightest and most volatile liquid, the product of the distillation of equal measures of alcohol and sulphuric acid. Its specific gravity is to water, as 632 to 1000; it boils at 98.

ETHICS. The science of moral duties, showing the rules and measures of human conduct which tend to happiness.

ETIQUETTE. Rules and ceremonies of good manners observed in genteel life.

ETNA, MOUNT. This famous burning mountain constitutes a large portion of the surface of the east end of the fine island of Sicily, is about 11,000 feet high, with an enormous crater at its top, which vomits burning lava 20 or 30 miles round, and is seldom dormant. History records its destructive eruptions during 3000 years. The city of Catania has been three times overwhelmed by its lava; the lava, however, when hardened by the atmosphere, forms good material for building, and after each succeeding disaster, the city has been rebuilt with increased taste and magnificence.



ETYMOLOGY. A branch of grammar, which teaches the original and derivation of words.

ETYMOLOGIST. One who traces words from their original sources.

EVACUATION (in Medicine.) The discharge of superfluous humours or excrements out of the body.

EVACUATION (in Military Affairs.) The leaving a town, fortress, or any place which has been occupied as a military post or position.

EVANGELIST. Literally, the bringer of good tidings; particularly, the writers of our Saviour's history, as Matthew, Mark, Luke, and John.

EVAPORATION (in Chymistry.) A process in which the superfluous moisture of any liquid substance is dispersed by means of fire.

EUCHARIST. The sacrament of the Lord's supper, so called because the death of our Redeemer is thereby commemorated with thankful remembrance.

EUDIOMETER. An instrument for ascertaining the purity of air, or the quantity of oxygen and nitrogen in atmospherical air.

EVERGREEN (in Gardening.) A species of perennials which preserve their verdure all the year round, such a hollies, laurustinus, bays, pines, firs, &c.

EVERLASTING PEA. A perennial of the vetch kind, which grows naturally in some places, and may be cultivated with advantage as food for cattle.

EVIDENCE (in Law.) The testimony adduced in a court, which may either be written, as by deeds, bonds, and other documents, or verbal, by witnesses examined viva voce.

EVIL. Distinguished into natural and moral. Natural evil is whatever destroys, or any way disturbs the perfection of natural beings; such as blindness, diseases, death, &c. Moral evil, is the disagreement between the actions of a moral agent, and the rule of those actions, whatever it is. Applied to a choice, or acting contrary to the moral or revealed laws of the Deity, it is termed wickedness, or sin. Applied to acting contrary to the mere rule of fitness, a fault.

EULOGY. Praise or commendation of a person.

EVOLUTION (in Arithmetic.) The extraction of the roots of any power.

EVOLUTION (in Military Tactics.) The complicated movement of a body of men when they change their position.

EVOLUTION (in Geometry.) The unfolding of a curve.

EVOLUTION (in Botany.) The expansion or opening of the bud.

EUPHONY (in Grammar.) Good sound in pronouncing a word. It is properly a figure whereby a letter that is too harsh is converted into a smoother, contrary to the ordinary rules, for the purpose of promoting smoothness and elegance in pronunciation.

EURITHMY (in Painting, Architecture, and Sculpture.) A certain majesty and elegance of appearance in the composition of diverse parts of a body, painting, or piece of sculpture. Vitruvius, who ranks eurithmy among the essentials in architecture, makes it to consist in the beauty of the construction or assemblage of the several parts of the work.

EWE. The female of the sheep.

EX (in Composition.) Now signifies late, as the ex-minister, the late minister.

EXACTION (in Law.) Injury done by an officer, or one who, under colour of his office, takes more than what the law allows.

EXAGGERATION. The making things appear more than they really are.

EXALTATION (in Chymistry.) The raising a thing to a higher degree of virtue, or increasing the principal property in a body.

EXAMINATION (in Law.) The examining of witnesses by questions.

EXAMINERS (in Law.) Officers in the Court of Chancery, appointed to examine witnesses.

EXCELLENCY. The title given to ambassadors, commanders, and governors of states.

EXCENTRICITY. See ECCENTRICITY.

EXCEPTION (in Law.) A stop or stay to any action, which consists either of a denial of the matter alleged in bar to the action, or, in the Court of Chancery, it is what is alleged against the sufficiency of an answer.

EXCHANGE (in Commerce.) The trucking or bartering one thing for another; also, the place where merchants meet for the purpose of transacting business; and likewise the giving a sum of money in one place for a bill, ordering the payment of it in another place.

EXCHANGE (in Arithmetic.) The reducing of moneys of different denominations from one to another, or the method of finding what quantity of the money of one place is equal to a given sum of another, according to a certain course of exchange.

EXCHANGE (in Law.) A mutual grant of equal interests, the one in consideration of the other.

EXCHANGE BROKERS. Men who give the merchants information how the exchange goes.

EXCHEQUER (in Law.) The office or place where the public money is kept and paid.

EXCHEQUER COURT. A court at Westminister, England, in which all causes relating to the revenue are tried.

EXCHEQUERED. Summoned before the Exchequer to answer any charge of defrauding the revenue, &c.

EXCISE DUTIES. Inland taxes on commodities of general consumption.

EXCOMMUNICATION. An ecclesiastical censure, whereby a person is excluded from communion with the church, and deprived of its privileges.

EXCORIATION. The rubbing or peeling away the cuticle or external skin.

EXCORTICATION. The stripping a tree of its bark.

EXCRESCENCE (in Surgery.) Any preternatural formation of flesh on any part of the body, as warts, wens, &c.

EXECUTION (in Law.) A judicial writ granted on the judgment of the court whence it issues.

EXECUTION (in Military Affairs.) The plundering and wasting a country in time of war.

EXECUTIVE (in Law.) That branch of the government which executes the functions of governing the state.

EXECUTOR (in Law.) One appointed by a testator to see that his will is executed.

EXECUTRIX. A female executor.

EXEMPLIFICATION. A duplicate of letters patent.

EXERCISE (in Military Tactics.) The practice of all military movements.

EXHALATION. A fume or vapour rising from the earth.

EXHIBITION. A public display of whatever is interesting either as a matter of art or a natural curiosity. In London, there is an annual exhibition made by the Royal Academy, of pictures recently painted; another of pictures in water-colours; besides others of different classes of artists. Liverpool, Edinburgh, Birmingham, and other places, have their annual exhibitions.

EXHUMATION. The act of digging up a body that has been interred.

EXIGENT (in Law.) A writ or part of the process of outlawry.

EXILE (in Law.) A person sent into some place distant from his native country, under a penalty not to return within a certain period.

EXIT (in Theatricals.) Going off the stage.

EX-OFFICIO. By virtue of one's office, as ex-officio informations, prosecutions commenced by the attorney general by virtue of his office, without applying to the court for permission.

EXORCIST. One who by prayers and incantations professes to cast out evil spirits.

EXORDIUM. The commencement of a speech, serving to prepare the audience.

EXOTIC PLANTS. Plants of foreign growth, which in this climate require a hothouse and every kind of nurture.

EXPANSION. An increase of the bulk of any body by a power acting within, particularly by the action of heat. The expansion of solid bodies is determined by the Pyrometer, and that of fluids by the Thermometer.

EX PARTE (in Law.) On one side, as ex parte statements, a partial statement, or that which is made on one side only.

EXPECTATION. In the doctrine of chances, is applied to any contingent event, upon the happening of which some benefit is expected.

EXPECTATION (of Life.) A term used to express the number of years, which, according to the experience of bills of mortality, persons at any age may be expected to live. This probability is greatest from 3 to 9 years of age, when it is about 50 years; at 20, it is 42 years; at 30—34 years; at 40—28 years; at 50—21 years; at 60—15 years; at 70—9 years; at 80—5 1-2 years; at 90—3 1-4 years; and at 100—2 1-4 years. One half of those born in this country live to be 30—one fourth to be 70—one tenth to be 80—and one fourth die under 2 years of age.

EXPECTORANTS. Medicines which promote expectoration, or a discharge of mucus from the breast.

EXPEDIENT. A temporary means of effecting an object, without regard to ulterior consequences.

EXPERIENCE. The source of knowledge arising from the faculty of memory, and the power of reasoning by analogy, by which every old animal is wiser and more cunning than a young one.

EXPERIMENT. A trial of the results of certain applications and motions of natural bodies, in order to discover something of their laws, nature, &c.

EXPERIMENTAL PHILOSOPHY. That philosophy which deduces the laws of nature from sensible experiments and observations. The wider range of experiments made by the moderns confer on them an ascendancy over the ancients on all subjects of this nature. The principal experimental science is chymistry; the others are optics, pneumatics, hydrostatics, electricity, and magnetism.

EXPERIMENTUM CRUCIS. A leading or decisive experiment.

EXPIRATION. A breathing out air from the lungs.

EXPLOSION. A sudden and violent expansion of an aerial or elastic fluid, accompanied with a noise.

EXPONENT (in Algebra.) The number or quantity expressing the degree or elevation of a power, as, in x^2, 2 is the exponent of the square number.

EXPORTS (in Commerce.) Goods exported or sent out of one's own country to a foreign land.

EXPOSITOR. One who explains the writings of others, particularly one who professes to expound the Scriptures.

EX POST FACTO. Literally, from something done afterwards, as, an ex post facto law, a law which operates upon a subject not liable to it at the time the law was made.

EXPRESS. A messenger sent with direct and specific instructions.

EXPRESSED OILS. Oils obtained from bodies by pressing.

EXPRESSION (in Chymistry or Phar

macy.) The pressing of the oils or juices of vegetables.

EXPRESSION (in Painting.) The distinct exhibition of character or of sentiment in the characters represented.

EXTEMPORE, or EXTEMPORANEOUSLY. Without preparation or premeditation.

EXTENSION. One of the essential properties of a body, to occupy some space.

EXTENT (in Law.) A writ of execution for valuing lands and tenements.

EXTENT (in Music.) The compass of a voice or instrument.

EXTENT IN AID. A seizure made by the government, when a public accountant becomes a defaulter.

EXTINGUISHMENT (in Law.) The annihilation of an estate, &c. by means of its being merged or consolidated with another.

EXTIRPATION (in Surgery.) The complete removal or destruction of any part, either by excision or by means of caustics.

EXTORTION. The unlawful act of an officer who, by colour of his office, takes money or any other thing when none at all is due.

EXTRACT (in Chymistry.) The purer parts of any substance extracted from its grosser parts by means of decoction, and formerly also by distillation, until they were of the consistence of paste or honey.

EXTRACT (in Literature.) Some select matter or sentences taken from a book.

EXTRACT (in Law.) A draught or copy of a writing.

EXTRACTION (in Surgery.) The drawing any foreign matter out of the body.

EXTRACTION (in Arithmetic.) The finding out the true root of any number or quantity.

EXTRACTION (in Genealogy.) The line, stem, or branch of a family from which a person is descended.

EXTRACTOR (in Surgery.) An instrument for drawing the stone from the body.

EXTRAORDINARY. Out of the common course; as, an Extraordinary Courier, one sent on an urgent occasion; Extraordinary Gazette, one published to announce some particular event.

EXTRAVASATION. The state of the fluids when they are out of their proper vessels, as when by the breaking of a blood vessel in the dura mater the blood is effused in the ventricles of the brain.

EXTREME UNCTION. A solemn anointing of any person in the Romish church, who is at the point of death.

EXUDATION. The emitting of moisture through the pores, as the exudation of gums through the bark of trees.

EXUVIÆ. The slough or cast off coverings of animals, particularly those of the snake kind.

EYE (in Anatomy.) The organ of sight, whereby visible objects are represented to the mind. The external parts of the eye are the eyebrows, eyelashes, eyelids, the lachrymal ducts, &c.; the internal parts of the eye, which compose the ball or globe of the eye, consist of membranes, chambers, and humours. It is a natural camera-obscura, provided with a lens, which, at the back of the eye, forms a picture, on an expansion of the nerves, called the retina. When the lens is too convex, the picture falls short of the nerve, and the person is short-sighted: when the picture tends to form beyond the nerve, owing to the lens not being sufficiently convex, then the person is long-sighted. In the first case, a concave glass is required, and in the latter a convex glass, as in aged persons.

EYE. A term applied to different objects from some supposed resemblance to the natural eye.

EYE (in Architecture.) The aperture at the top of a dome, and to the centre of a volute.

EYE (in Botany.) That part of a potato and other things where the bud puts forth.

EYE (in Printing.) The graving in relievo on the top or face of the letter.

EYEGLASS. A glass put close to the eye, for the purpose of bringing objects nearer.

F.

F, the sixth letter in the alphabet, stood as a numeral for 40, and with a dash over it, for 40,000; it now stands for one of the Dominical or Sunday letters, and also, in Music, for the fourth note in the diatonic scale.

FA (in Music.) The fourth note of the modern scale, which is either flat or sharp; the flat is marked thus, ♭, and the sharp thus, ♯.

FABLE. A tale or fictitious narration intended to instruct or convey a moral, as the Fables of Æsop; also, the principal part of an epic or dramatic piece.

FABRIC (in Commerce.) The same as manufacture; lace of the fabric of Brussels, &c.

FACADE. The front or the principal side of a building.

FACE (in Anatomy.) The lower and anterior part of the skull; in general, the fore part of any thing, as the face of a stone, anvil, &c.

FACE (in Fortification) The face of a bastion, the most advanced part towards the field.

FACE (in Gunnery.) The metal at the extremity of the muzzle of a gun.

FACE (in Military Tactics.) The side of a battalion formed into a square.

FACET. The small side of a diamond.

FAC SIMILE. The copy of a person's writing, as of a letter in imitation of his own handwriting.

FACTITIOUS. Made by art; as, factitious cinnabar, in distinction from that procured naturally.

FACTOR (in Commerce.) An agent commissioned by merchants to buy or sell goods on their account.

FACTORS (in Arithmetic.) The two numbers that are multiplied together.

FACTORY. A place in a distant country, where factors reside for purposes of trade; also, the trades themselves collectively.

FACULÆ (in Astronomy.) Bright spots on the surface of the sun.

FACULTIES (in the Universities.) The divisions under which the arts and sciences are classed, and degrees granted. These are for the most part four, as, 1. Arts, including Humanity and Philosophy; 2. Theology; 3. Physic; and, 4. Civil Law.

FACULTY (in Law.) A dispensation or privilege.

FACULTY (in Physics.) That power by which a living creature moves and acts. This may be either an animal or corporeal faculty belonging to the body, or a rational faculty belonging to the mind.

FÆCES. The dregs or gross substances which settle after fermentation.

FÆCULÆ. Small dregs or lees.

FAGG. A sea term for the end of the strands which do not go through the tops when a cable or rope is closed.

FAINTS (in Chymistry.) The weak spirituous liquor that runs off from the still after the proof spirit is taken away.

FAIR. A larger kind of market, held once, twice, or oftener in the year.

FAIR MAID OF FRANCE. A plant of the ranunculus tribe, bearing an exceedingly white flower.

FAIRY. A kind of genii or imaginary spirits of a diminutive size, and fabled to haunt houses and revel in meadows during night, &c.

FAIRY CIRCLE, or RING. A phenomenon frequently seen in the fields, consisting of a round bare path with grass in the middle, formerly ascribed to the dances of the fairies. It is supposed by some to be a fungus which eats away the grass in this circular form, or by others the effect of lightning.

FAIRY TALES. Eastern tales of the wonderful proceedings wrought by fairies.

FAKIR. A sort of dervises or Mahometan monks.

FALCHION. A kind of sword turned up somewhat like a hook.

FALCON. A bird of prey, one much esteemed as an auxiliary of the savage arts of man, in destroying the feathered race. Falcons were formerly tamed and trained, just as pointer dogs are at present trained: and hawking, or falconry, was, to a certain class of minds, as interesting as shooting or hunting is to the same class in our days. They are carnivorous, the beak hooked, the head covered with feathers, and the legs and feet scaly.

FALCONER. One who looks after and trains hawks.

FALL (in Physics.) The descent or natural motion of bodies towards the earth.

FALL (in Military Affairs.) The surrender of a town; among Seamen, the loose end of a tackle.

FALL (in Husbandry.) The descent of ground which serves to carry off the water.

FALLACY. A logical artifice, or an argument framed so as to deceive; a sophism.

FALLING SICKNESS. See EPILEPSY.

FALLOW. Land laid up and left without a crop for a year, in order to give the soil time to recover itself; the act of so doing is called fallowing.

FALLOW-FINCH. A bird, otherwise named White-Ear.

FALSE. An epithet used in law, as False Imprisonment, the trespass of imprisoning a man without lawful cause; in Mineralogy, as False Diamond, a diamond counterfeited with glass.

FALSE FLOWER (in Botany.) A flower which does not seem to produce any fruit.

FALSE ROOF (in Carpentry.) That part of a house which is between the roof and the covering.

FALSIFYING (in Law.) Proving a thing to be false, as falsifying records.

FAMILY (in Law.) All living in one house under one head; also, the kindred or lineage of a person.

FAMILY (in Natural History.) Any order of animals, or other natural production of the same class.

FAN. A sort of basket in which the corn is winnowed, to separate the chaff from it.

FANDANGO. A dance much practised in Spain.

FAR. An abbreviation for farthing.

FARCE. A sort of mock comedy, in which there is much grimace and buffoonery.

FARCY. A sort of leprosy in horses.

FARE. Money paid for the passage of a person in any vehicle, either by land or by water.

FARINA. The pulverulent and glutinous part of wheat and other seeds, obtained by grinding. Also, the dust or fructifying pollen on the anthers of plants.

FARM. Part of an estate in land employed in husbandry, and let to a tenant on condition of paying rent to the owner thereof.

FARMER. Properly, one who occupies and cultivates a farm or hired ground; a cultivator of ground generally.

FARMING. The cultivating of land for the purposes of profit.

FARRAGO. A mixture of several sorts of seed sown in the same plot of ground.

FARRIER. One who shoes horses, and also cures their diseases. As farriers worked most in iron, they were originally called ferrers or ferriers, from ferrum, iron.

FARRIERY. The art of shoeing and managing a horse altogether, including also the cure of his diseases. On the application of science to this art, it rose in importance and estimation; a college was formed some years ago, in England, for practitioners in animal medicine and surgery, which, in imitation of the French, was called the Veterinary College, and the art itself the Veterinary Art.

FARTHING. The fourth part of a penny.

F. A. S. i. e. Fraternitas Antiquariorum Socius, or Fellow of the Antiquarian Society.

FASCES. Bundles of rods bound round the helves of hatchets, which were carried before the Roman consuls as insignia of their office.

FASCETS. Irons used in a glass manufactory.

FASCINES (in Fortification.) Small branches of trees bound up in bundles for filling ditches, &c.

FAST. An abstinence from food on a religious account.

FASTI. The Roman calendar, in which were set down the feasts, games, ceremonies, &c.

FAT. A concrete oily matter contained in the cellular membrane of animals.

FATA MORGANA. A singular aerial phenomenon, seen in the straits of Messina. When the rising sun shines from that point whence its incident ray forms an angle of about forty-five degrees on the sea of Reggio, and the bright surface of the water in the bay is not disturbed either by the wind or current, when the tide is at its height, and the waters pressed up by currents to a great elevation in the middle of the channel, the spectator being placed on an eminence with his back to the sun, and his face to the sea, the mountains of Messina rising like a wall behind it, and forming the back ground of the picture; on a sudden there appears in the water, as in a catoptric theatre, various multiplied objects; that is to say, numberless series of pilasters, arches, castles, well delineated, regular columns, lofty towers, superb palaces, with balconies and windows, extended alleys of trees, delightful plains, with herds and flocks, armies of men on foot, on horseback, and many other images in their natural colours, and proper actions, passing rapidly in succession along the surface of the sea, during the whole of the short period of time while the above-mentioned causes remain. All these objects, which are exhibited in the Fata Morgana, are proved by the accurate observations of the coast and town of Reggio, by P. Minasi, to be derived from objects on shore. If the air be slightly hazy and opaque, and at the same time dewy, and adapted to form the iris, the above mentioned objects will appear only at the surface of the sea, as in the first case, but all vividly coloured or fringed with red, green, blue, and other prismatic colours. The delusion in the desert, between Alexandria and Cairo, mentioned by M. Monge, which represented villages surrounded by water, when they were, in fact, in the midst of burning sands, is attributed to the same cause.

FATE. An inevitable necessity depending upon a superior cause. It implies a word or decree pronounced by God, or a fixed sentence whereby the Deity has prescribed the order of things, and allotted to every person what shall befall him. It is also used to express a certain unavoidable designation of things, by which all agents, both necessary and voluntary, are swayed and directed to their ends.

FATES. According to the poets, the three fatal sisters, Clotho, Lacheris, and Atropos, who determined the duration of life.

FATHER LASHER. A voracious fish, inhabiting the shores of Greenland and Newfoundland.

FATHER LONG-LEGS. A harmless insect, with a small body and exceedingly long legs.

FATHOM. A long measure of six feet.

FAUNS. Rural deities, having horns on their heads, with pointed ears and tails.

FAWN. A young deer; a buck or doe of the first year.

F. E. An abbreviation for Flemish Ells.

FEASTS. Anniversary times of feasting and thanksgiving, such as Christmas and Easter, &c. Some feasts are moveable, that is, not confined to any particular day, as Easter and all that are governed by it; others, as Christmas, &c. are immoveable, that is, fixed to a day.

FEATHER. That which forms the covering of birds. The constituent parts of feathers

are, for the most part, albumen, with a little gelatine.

FEATHER (in the Manege.) A row of hair turned back and raised on the neck of a horse.

FEATHER-EDGED BOARDS. Boards having one edge thinner than the other.

FEATHERS. The finest kind of feathers, as ostrich feathers, which are used for ornament.

FEB. An abbreviation for February.

FEBRIFUGE. A sort of medicines which abate the violence of fever.

FEDERAL. United by a compact, as the United States, &c.

FEE. An estate of inheritance, or the interest which a man has in land or some other immoveable: this is called a fee simple when it is unconditional, and a fee tail when limited to certain heirs according to the will of the first donor.

FEEDER. A sort of drain which carries the water into other drains.

FEELERS. Organs fixed to the mouth of insects, which are vulgarly called horns: the feelers are, however, smaller than the antennæ, or horns, in some insects.

FEELING. One of the five senses, which acts by means of the nerves that are distributed in all parts of the body.

FEES. Perquisites allowed to officers in the administration of justice.

FEIGNED ACTION. An action which is brought simply to try the merits of a question.

FEINT (in Military Tactics.) A mock attack, made to conceal the true one.

FELLOES. The pieces of wood which form the circumference or circular part of the wheel.

FELLOW. The member of a college or of a corporate body.

FELLOWSHIP (in Arithmetic.) A rule by which the loss and gain of each particular person in a joint stock concern is discovered.

FELO DE SE, i. e. properly FELONIA DE SE. A suicide, or one who commits a felony on himself by self-murder.

FELONY. Any offence next to treason, such as murder, burglary, &c. the punishment of which varies according to the crime.

FELSPAR. A siliceous mineral found mostly in mountains, a compound of silica, alumina, and potash, one of the constituents of granite, softer than quartz, and harder than glass, generally white, grayish, or reddish, and convertible into clay.

FELT. A sort of coarse wool or hair, used in the making of hats.

FELT-GRAIN. The grain of cut timber that runs transversely to the annular rings or plates.

FELTING. The process of working felt into hats.

FELTING (in Carpentry.) The splitting of timber by the felt-grain.

FELUCCA. A light open vessel with six oars, much used in the Mediterranean. Its helm may be used either at the head or the stern.

FEMALE FLOWER. A flower having pistils or stigmas without stamens.

FEMALE SCREW. A screw, the spiral thread of which is cut in the cavity of the cylinder.

FEME COVERT (in Law.) A married woman.

FEME SOLE. A single woman.

FEMININE GENDER (in Grammar.) The property of Nouns denoting the female sex.

FEN. A place overflowed with water, and abounding in bogs.

FENCE (in Husbandry.) A hedge, wall, or ditch, &c. made to part off a field or garden.

FENCING. The art of using the sword, either in attack or defence. In the exercise of this art, foils or thin swords are used, which, being blunted at the points and bending readily, are perfectly harmless.

FENDER. An iron plate to keep the fire and ashes from the room.

FENDERS. A sea term for pieces of old cable, &c. hung over the sides of a ship to keep off other ships.

FENNEL, the COMMON, or Fennel Dill, *Anethum Fœniculum*, L. a native perennial plant growing on chalk cliffs, and common on the western coasts. Its yellow flowers appear in July or August.

The tender buds of this aromatic plant are useful in salads; its leaves are boiled and used in sauces for several kinds of fish, and also eaten raw with pickled salmon, &c.

FEOFFEE (in Law.) He to whom a feoffment is made.

FEOFFMENT (in Law.) The gift or grant of any hereditament to another in fee simple.

FEOFFOR. He who makes a feoffment.

FERÆ. The third order of animals in the Linnæan system, including such as have from six to ten conic fore teeth and one tusk; as the seal, the dog, the wolf, the hyæna, the jackal, the lynx, the tiger, the panther, &c.

FERMENT. Any substance which has the property of causing fermentation in another body, as the acid in leaven.

FERMENTATION. The intestine commotion in the small insensible particles of a mixed body, usually caused by the operation of acid matter. When animal liquids alone, or mixed with vegetable, become sour, this is called acetous fermentation, and the product is, generally speaking, acetic acid or vinegar. When saccharine matter, or the sweet juices of fruits, undergo this intestine change, it is called vinous fermentation, and the result is an intoxicating liquor, as wine or beer, &c.

FERN. A weed, very common in dry and barren places, which is very injurious to the land in which it has once taken root.

FERRET. An animal of the weasel tribe, with red eyes and a long snout; it is much used in catching rabbits and rats.

FERRUGINOUS. An epithet for any thing partaking of iron, or containing any particles of that metal.

FERRY. A vessel employed for conveying persons and goods over a narrow piece of water.

FERRYMAN. One who keeps a ferry.

FERULA. An instrument of correction in schools, with which boys are beaten on the hand.

FERULA (in Botany.) A plant, otherwise called Fennel Giant, which is an herbaceous perennial.

FESCUE-GRASS. A sort of grass cultivated as food for cattle.

FESSE. One of the honourable ordinaries, which occupies the third part and the middle of the field.

FESTOON. An ornament of carved wood, in manner of wreaths or garlands hanging down.

FETLOCK. A tuft of hair that grows behind the pastern joint in the feet of horses.

FETTERS (in Law.) A sort of irons put on the legs of malefactors.

FEUD (in Law.) The right which the vassal or tenant had in lands and other immoveable things of his lord's, to use the same and take the profits thereof, rendering unto his lord such duties and services as belonged to military tenure; the property of the soil, &c. always remaining to the lord. The laws respecting these feuds, which are comprehended under the name of the Feudal System, regulated all the principles of landed property in the kingdom of Great Britain until the reign of Charles II.; and vestiges of this system are still to be seen in their modern tenures, particularly in copyholds.

FEVER. A disease characterized by an increase of heat, an accelerated pulse, a foul tongue, and an impaired state of several functions.

FIAT, i. e. LET IT BE DONE. A short order or warrant of some judge for making out and allowing certain processes.

FIBRE (in Anatomy.) A simple filament, serving to form other parts, as the muscles, nerves, &c.

FIBRE (in Botany.) Threads or hair-like strings in plants, roots, &c.; the first constituent parts of bodies.

FIBRIL. A small fibre.

FIBRINA (in Chymistry.) That substance which constitutes the fibrous part of muscles. It is of a white colour, without taste or smell, and not soluble in alcohol or water.

FIBROLITE. A mineral consisting of alumina, silica, and iron.

FIBULA (in Anatomy.) The lesser and outer bone of the leg.

FICTION (in Law.) A supposition that a thing is true, so that it may have the effect of truth as far as is consistent with equity.

FIELD. Arable land, or any plot of ground parted off for cultivation.

FIELD (in Heraldry.) The whole surface of the shield or escutcheon.

FIELD (in Military Tactics.) The ground chosen for any battle.

FIELD (in Painting.) The ground or blank space on which any thing may be drawn.

FIELD-BED (in Military Affairs.) A folding bed used by officers in their tents.

FIELDFARE. A migratory bird of the thrush tribe, that visits England about Michaelmas and leaves it in March.

FIELD-OFFICERS. Those who command a whole regiment.

FIELD-PIECE. A sort of cannon, consisting of eighteen pounders and less.

FIELD-WORKS (in Fortification.) Works thrown up by an army in besieging a fortress.

FIERI FACIAS. A writ commanding a sheriff to levy the debt or damages on the goods of one against whom judgment has been had in an action of debt.

FIFE. A shrill wind instrument of the martial kind, consisting of a short narrow tube, with holes disposed along the side for the regulation of its tones.

FIFER. One who plays on the fife in the army.

FIG. A tree with an upright stem branching fifteen or twenty feet high, with large palmated or hand-shaped leaves. It flourishes in warm climates, and bears a fruit which, when dried, is remarkable for its luscious sweetness. Figs ripen very well by the middle of September, in Philadelphia, when enjoying a free

exposure to the sun. In the southern states they flourish luxuriantly, and might become an article of extensive export and home consumption, if pains were taken to introduce the large Levant fig.

FIG (in Farriery.) A kind of wart on the flesh of a horse, that is often filled with foul humours.

FIGHTS. Waste clothes hung round a ship in battle, to prevent the men from being seen.

FIGURE (in Painting.) The lines and colours which form the representation of an object.

FIGURE (in Geometry.) A space terminated on all parts by lines curved or straight.

FIGURE (in Arithmetic.) One of the nine digits, as 1, 2, 3, &c.

FIGURE (in Grammar and Rhetoric.) A word or form of expression which deviates from the common and natural meaning.

FILACER. An officer of the Court of Common Pleas who files the writs, whereon he makes out process.

FILAGREE, or FILIGRANE. An ornamental work in which flowers or other figures are wrought with gold or silver threads.

FILAMENT (in Botany.) The thread-like part of the stamen, which supports the anther.

FILBERT. A sort of nut tree cultivated in gardens, the fruit of which is larger and finer than the common wild nut.

FILE (in Trade and Law.) A wire or thread on which loose papers are filed up together.

FILE (among Mechanics.) A tool of steel, with which iron or any metal is polished. Files are cut in little furrows in a certain direction, and of a certain depth, according to the grain or touch required. Files are either cut by the hand with a chisel and mallet, or by means of a machine; but the latter mode is not so good.

FILE (in Military Tactics.) A straight line or row formed by soldiers.

FILICES. An order of plants of the class cryptogamia in the Linnæan system, including the fern, horse-tail, adder's tongue, maiden-hair, spleenwort, polypody, &c.

FILLET (in Heraldry.) A kind of bordure.

FILLET (in Architecture.) A little member that connects the other members.

FILLET (in Painting.) A little ringlet of leaf gold.

FILM (in Surgery.) A thin skin that covers the eye.

FILM (in Farriery.) A thick pellicle or skin, that is formed on the eyes of horses; in consequence of which their sight is impaired.

FILM (in Botany.) The thin woody skin that separates the seed in the pod.

FILTER (in Chymistry.) A strainer through which any fluid is passed so as to separate the grosser particles from it.

FILTERING PAPER. Paper without size, that may be used in filtering.

FILTERING-STONE. A sort of stone or basin which is sometimes used for purifying water. It is artificial as well as natural, and has been variously constructed to answer the purpose.

FILTRATION (in Chymistry, as well as in Domestic Economy.) The process of straining or filtering liquors by means of woollen cloth, cotton, linen, paper, or other materials.

FIN. The membrane in fishes by which they perform their movements in the water.

FINAL. The last or concluding. Final letters are those which are used only at the end of words, as in the Hebrew and other oriental languages.

FINAL (in Music.) The last sound of a verse in a chant.

FINALE. The last piece in a concert, &c.

FINANCES (in Political Economy.) The treasures or revenue of a government.

FINANCIER. An officer who manages the finances.

FINE (in Law.) A penalty or amends made in money for an offence; also, money paid for the renewal of a lease, and a conveyance of lands or tenements, in order to cut off all controversies.

FINE-DRAWING. Sewing up the rents in woollen cloths so finely that they cannot be seen.

FINERS OF GOLD AND SILVER. Those who separate the metals from coarser ores.

FINERY. The furnace in which metals are refined, that is, hammered and fashioned into what is called a bloom or square bar.

FIN-FISH. A smaller sort of whale.

FINGAL'S CAVE. In the island of Staffa, Scotland, is a remarkable cavern of great extent. It is supported on each side by ranges

of columns, and roofed by the bottoms of such as have been broken away.

FIR or FIR-TREE. A tree valuable for the timber, pitch, tar, &c. which it yields in abundance. The sorts most esteemed are the Scotch fir, Norway fir, Spruce fir, and Canada fir.

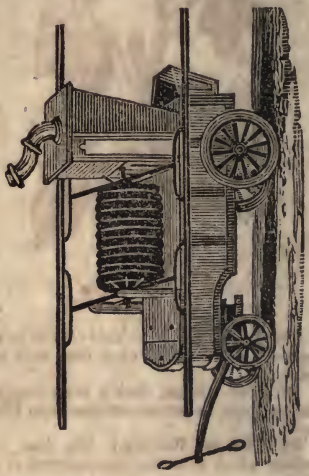
FIRE (in Chymistry.) That invisible fluid by which bodies are expanded, and become hot, is best known from its effects; and to these, and not to the disputes that have agitated philsophers concerning this subject, must we look for all the knowledge to be gained respecting this chief agent in nature, on which animal and vegetable existence have so close and inscrutable a dependence, and without which it does not appear that nature could exist a single moment. Whenever you perceive a number of qualities always existing together, you are warranted to conclude, that there is some substance which produces those qualities. Fire drives out other bodies from any given space; it has a constant tendency to diffuse itself uniformly, so as to maintain equilibrium; it dilates some substances; it must have penetrated them; it expels other bodies, and takes their place; therefore, we conclude it must itself be a body, a real and material substance.

FIREBALLS. Luminous bodies usually appearing at a great height.

FIREBRAND. A piece of burning wood taken out of the fire.

FIRE DAMP. Carburetted hydrogen gas, which, by the excitement of flame, combines with oxygen, and, as an enlarged flame, explodes in mines.

FIRE-ENGINE. An engine for the extinguishing of fire, which consists of two forcing pumps so combined that their joint action produces a constant and powerful stream of water, which, by means of a pipe may be directed at pleasure to any point.



FIRE-FLY. A species of flies common in Guiana, having on each side of the head a globular luminous body, that shines like a star. They live in rotten trees in the day, and always appear at night.

FIREMAN. One who is employed in extinguishing fires.

FIRE-SHIP. A ship filled with combustibles, to set fire to the vessels of the enemy.

FIRE-WORKS. Compositions of sulphur, saltpetre, and charcoal, which exhibit a handsome appearance when fired off.

FIRKIN. An English measure of capacity, containing nine gallons of beer.

FIRMAN. A passport granted in Turkey and India for the liberty of trade.

FIRSTLING. The young of cattle which are first brought forth.

FISH, or FISHES (in Natural History.) Animals which cannot live out of water, vertebrated, with fins, or feet, naked or scaly, a single heart, and cold blood. They constitute the fourth class of the Linnæan system, and are divided into five orders, viz. Abdominales, Apodes, Cartilagini, Jugulares, and Thoracici. They move with great velocity, by means of fins, serving the purpose of oars

and rudders: in general they have two, called pectoral, behind the opening of the gills; two, called ventral, under the belly; one, called dorsal, on the back; another, called anal, near the tail; and the very operative one, at the end of the tail; the size depending on the form of the fish. They are protected from cold by oily secretions; they live upon one another, and also upon vegetables and insects; and they emigrate from one sea to another. They breathe by their gills, absorbing the air contained in the water, soon dying if air is withheld, as under ice, or in a close vessel. They appear to have the same senses as land animals, but that of seeing in greater perfection. Systems of ichthyology record 2500 known species.

FISH, or ROYAL FISH (in Law.) The whale and sturgeon, so denominated in England, because the king is entitled to them whenever they are thrown on shore or caught near the coasts.

FISH (among Mariners.) A machine employed to hoist and draw up the flooks of ships' anchors towards the top of the bow.

FISHERY. The place where fish are caught for the purposes of trade.

FISH-GIG. An instrument for striking fish at sea.

FISHING-FLY. A bait used for catching fish.

FISHING-HOOK. An instrument of steel wire, fitted for catching and retaining fish.

FISHING-LINE. A line of twisted hair fixed to a rod called the fishing-rod, and having at one end the fishing-hook.

FISHMONGER, A dealer in fish.

FISTULA. A long and sinuous ulcer.

FITCHET. An animal of the weasel or ferret kind.

FIXATION. The making any volatile spirituous body endure the fire.

FIXED AIR. A name formerly given by chymists to the air which was extricated from lime, magnesia, and alkalies, now commonly called carbonic acid gas. It suffocates animals, and extinguishes flame, but sustains vegetables.

FIXED BODIES. Such as neither fire nor any corrosive menstruum have the power of reducing to their component elements, as ammonia.

FIXED STARS. Such as do not change their positions in respect to one another.

FLAG (in Naval or Military Affairs.) The colours or ensign of a ship, or of a regiment of land forces.

FLAG (in Botany.) A sort of rush with a large leaf. It is of different kinds, as the common flag, or water iris, that grows in rivers and bears a yellow flower; the corn flag, or gladiole, a bulbous plant; and the sweet flag, a perennial; which two last are cultivated in gardens.

FLAGEOLET. A little flute.

FLAG-OFFICER. An officer commanding a squadron.

FLAGON. A large drinking vessel.

FLAG-SHIP. A ship commanded by a flag-officer.

FLAG-STAFF. The staff set on the head of the topgallant mast, on which the flag is placed.

FLAGSTONE. A sort of stone used for smooth pavement.

FLAIL. An instrument used for thrashing corn.

FLAMBEAU. A kind of large taper, made of hempen wicks, by pouring melted wax on their top, and letting it run down to the bottom. This done, they lay them to dry; after which, they roll them on a table, and join four of them together by means of a red hot iron; and then pour on more wax, till the flambeau is brought to the size required.

FLAME. The most subtle and the brightest part of fire, ascending above in a pyramidal or conical figure, and has been conjectured by Newton to be a vapour red-hot; which, however, seems to be an imperfect idea. We should rather say, that flame is an instance of combustion whose colour will be determined by the degree of decomposition which takes place.

FLAMINGO. A fowl of the grallic order. The beak is naked, toothed, and appears as if broken; the feet palmated and four-toed. It resembles the heron in shape, but is entirely red excepting the quill feathers. It is a native of Africa and America.

FLASK. A measure for holding gunpowder.

FLAT (in Music.) A character marked thus ♭, which lowers a note one semitone.

FLAX. A plant, from the fibres, or skin, of which linen thread is made. Common flax, as represented underneath, is an annual; but the other kinds are perennials.

FLAX-DRESSING. The separation of the skin or fine fibres from the wood or stalk of the flax plant, by breaking the stalk in a machine, and then drawing it through a hatchel, as represented in the engraving.

FLAX EARTH, or MOUNTAIN FLAX. See ASBESTOS.

FLEA. An insect of a deep purple colour, with two eyes and six feet, with feelers like threads. It is remarkable for its agility, leaping to a surprising distance, and its bite is very troublesome. They abound about barns and hog-styes.

FLEAM. An instrument for lancing the gums or bleeding cattle.

FLEECE. A flock of wool, or what comes from a sheep at one sheering.

FLEET. A number of ships together in company or under one commander.

FLEET (in Law.) A prison in London, where debtors are confined.

FLESH (in Anatomy.) The soft and fibrous part of an animal body; also, the red part of a muscle.

FLESH (in Botany.) The pulpy substance of any fruit or root.

FLEUR DE LIS, or FLOWER DE LUCE (in Heraldry.) A bearing in the arms of France, and in other coats of arms.

FLINT. A semi-transparent and hard stone, found between chalk strata, containing 98 hundredths of silex, often hollow, and apparently formed during the ebullition of chalk, by its siliceous parts being thrown up. When struck against iron, the motion makes a separated particle red hot, which falling on any inflammable substance, as tinder, or gunpowder, produces decomposition, and hence it is much used in fire-arms.

FLINTS (among Gunsmiths.) Pieces of flint cut so as to go between the jaws of the cock of a gun.

FLOAT. A raft or number of pieces of timber fastened together with rafters athwart, to be driven down a river with the tide.

FLOATING BATTERY. Vessels used as batteries to cover troops in landing on an enemy's coast.

FLOCK. A number of sheep in company; also, a lock of wool.

FLOETZ. Beds or strata of earth, containing the remains of animal or vegetable substances, &c.

FLOOD. The flux of the tide when the water continues rising.

FLOOD-GATE. A sluice or gate that may be opened or shut, for the admission or exclusion of the water.

FLOOR. The area or surface of a room.

FLOOR (in Ship Building.) The bottom of the ship which rests on the ground.

FLORA (in the Heathen Mythology.) The goddess of flowers; in Botany, the title of some botanical works.

FLORIN. A coin of different value; the silver florin of Holland is worth about forty cents.

FLOUR. The fine parts of wheat corn round and sifted.

FLOWER. The beautiful part of a plant, the blossom; the parts or divisions of which are called petals. It contains the parts of fructification, or the germ of the fruit.

FLOWER DE LUCE. A species of the iris; a bulbous root having a lily flower of one leaf, shaped like that of the common iris.

FLOWERS (in Chymistry.) The fine mealy matter which, in sublimation, is carried up to the head of the vessel, as the flowers of benzoin, zinc, &c.

FLUATES. A kind of salts formed by the combination of fluoric acid with different bases, as the fluate of ammonia.

FLUE. The small winding chimney in a furnace for conveying smoke, air, and heat, into a larger chimney; also, the down or soft hair of rabbits and feathers.

FLUELLEN. An annual that grows in gardens.

FLUID (in Physiology.) A fluid body, or one whose parts yield to the smallest force impressed, and are easily moved among each other. Fluids are either elastic, as the air, or non-elastic, as water, mercury, &c.

FLUID (in Anatomy.) The fluids of the animal body are the humours and juices, as the blood, chyle, saliva, &c.

FLUIDITY. The state of bodies when their parts are very readily moveable in all directions with respect to each other. It stands directly opposed to solidity or firmness, and is distinguished from liquidity and humidity, inasmuch as the latter imply also wetting and adhering. Melted metals, air, ether, smoke, and flame, are fluid but not liquid bodies, their parts being dry and leaving no sense of moisture. Solids are converted into fluids by means of heat.

FLUOR SPAR, or DERBYSHIRE SPAR. A species of salt which abounds in nature, and consists of a calcareous earth in combination with fluoric acid. It is called fluor, because it melts readily; it is called spar, because it has a sparry form and fracture; and it is also called vitreous spar, because it has the appearance of glass.

FLUORIC ACID. A gaseous substance procured from fluor spar, which is of a corroding nature, and will dissolve glass, for which reason it has been used for etching on glass. This acid gas readily combines with water; and when dropped in, a hissing noise is produced with much heat.

FLUTE. A wind instrument, and the simplest of its kind, with stops for the fingers; also, a provision ship, partially equipped for defence, is said to be armed *en flute*.

FLUTES. The hollow channels found along the surface of a column.

FLUX (in Physiology.) That motion of the water by which it rises.

FLUX (in Chymistry.) Any substance or mixture added to assist the fusion of minerals and metals. In assaying, alkalies are used as fluxes, which render the earthy mixtures fusible by connecting them with glass.

FLUXIONS. That branch of algebra which treats of the velocities with which the fluents or flowing quantities increase or decrease. The variable or flowing quantities are represented by the letters, v, w, x, y, z; the invariable quantities by the letters a, b, c, d, &c. The fluxion is represented by a dot thus, $\dot{y}$, $\dot{z}$.

FLY (in Natural History.) A small winged insect, common about houses.

FLY (among Mechanics.) That part of a jack which puts the rest of the machine in motion.

FLY (among Mariners.) That part of a compass on which the thirty-two points are described.

FLY (among Carpenters.) Flies or flyers are the series of steps which go straight forward without winding.

FLY-BOAT. A large vessel with a broad bow, used in the English coasting trade.

FLY-BLOW. The deposit of the eggs, maggots, or nymphæ of flies, in meat.

FLY-CATCHER. A sort of bird inhabiting Asia, Africa, and America, so called because it lives upon flies.

FLYING BRIDGE. See BRIDGE.

FLYING DRAGON. A four-footed reptile, of the lizard tribe, about 12 inches long, inhabiting Africa and India, which has a lateral membrane serving as a wing.

FLYING FISH. A fish inhabiting the European and American seas, which, by the help of its long pectoral fins, is enabled to raise itself out of the water, and to fly a short distance when pursued by other fish.

FLY-ORCHIS. A plant, so called from the resemblance it bears in its figure to a fly.

FLY-TRAP, or VENUS'S FLY-TRAP. A sensitive plant, the leaves of which consist of two lobes, that close when they are irritated within, and consequently entrap any insect that lights upon them.

FOAL. The young of a horse or other beast of burden.

FOCUS (in Optics.) The point of convergence or concourse, where all the rays meet after passing through a convex lens.

FOCUS (in Geometry and Conic Sections.) A certain point in the parabola and ellipses, &c. where the rays reflected from all parts of these curves concur.

FODDER. Dry food for cattle.

FOG, or MIST. A meteor consisting of condensed vapours floating near the surface of the earth.

FOIL (in Fencing.) An instrument without a point, to fence with by way of exercise.

FOIL (among Glass-grinders.) A sheet of tin laid on the back of a looking-glass, to make it reflect.

FOIL (among Jewellers.) A thin leaf of metal placed under a precious stone, to increase its brilliancy.

FOLD. An enclosed place in which sheep are confined.

FOLIAGE. A cluster or assemblage of the leaves of trees.

FOLIAGE (in Architecture.) Ornaments representing leaves, used in cornices, &c.

FOLIATING. Spreading the plates of glass over with the foil, in order to make them reflect.

FOLIO. The full size of paper as it comes from the manufacturer; also, books printed on paper of that size.

FOLIO (in Merchant's Accounts.) The page, including the right and left hand page, in a merchant's ledger, which are numbered by the same figure, so that they may correspond.

FOMENTATION. The bathing any part of the body with a decoction of herbs, &c. A similar application with bags of herbs and other ingredients is called a dry fomentation.

FOOT. A measure of length consisting of twelve inches.

FOOT (in Poetry.) A certain number of syllables which serve for measuring the verse.

FOOT (in Military Tactics.) Soldiers who serve on foot.

FORAGE. Provender for horses in an army.

FORCE (in Physiology.) Whatever is or may be made the primary cause of motion in bodies.

FORCE (in Law.) Unlawful violence.

FORCE (in Military Affairs.) Any body of men that may be employed in action.

FORCEPS. A surgeon's tongs, pincers, &c.

FORCER, or FORCING PUMP. A pump with a forcer or piston without a valve.

FORCING (among Gardeners.) A method of obtaining fruit and flowers before their season, by the application of heat.

FORCING (in Commerce.) The fining down wines so as to render them fit for immediate use.

FORE. A sea term for near the stem; as, 'fore and aft,' that is, from stem to stern.

FORECASTLE. A cabin or room in the fore part of the ship, occupied by the sailors.

FORECLOSED (in Law.) Excluded or barred the equity of redemption on mortgages, &c.

FOREIGN ATTACHMENT (in Law.) An attachment of foreigners' goods found within a liberty or city.

FORENSIC. Belonging to the bar or courts of law.

FORESHORTENING (in Painting.) The making a head or face in a drawing appear shorter before.

FORESTALLING. The buying or bargaining for corn or other merchandise before it comes into the market.

FORFEITURE (in Law.) The loss of goods, lands, or employments, &c. for neglecting to do one's duty, or for some crime committed.

FORGE. A furnace, in which smiths heat their metals red-hot, or in which the ore taken out of the mine is melted down.

FORGERY (in Law.) The fraudulent making or altering any record, deed, or writing, &c. to the prejudice of another man's right, particularly the counterfeiting the signature of another with intent to do fraud, which, by the law of England, is made a capital felony.

FORGING (in Smithery.) The beating or hammering iron on an anvil.

FORK. An instrument divided at the end into two or more prongs, for various uses.

FORM (in Physiology.) The essential and distinguishing modification of the matter of which any body is composed.

FORM (among Mechanics.) A kind of mould in which any thing is wrought.

FORM (among Printers.) The chase or frame filled with type or letter the size and form of a page, made ready for the press. This form will be quarto if the sheet consist of 8 pages; octavo, if it consist of 16 pages; and duodecimo, if it consist of 24.

FORMA PAUPERIS, i. e. IN THE FORM OF A PAUPER. A form in which any one may sue who swears that he is not worth 20 dollars, and brings a certificate from some lawyer that he has just cause of suit. In that case he has counsel assigned, and is released from costs of suit, &c.

FORMIC ACID. The acid of ants, which is obtained chiefly from the red ant.

FORMULA (in Mathematics.) A general theorem or literal expression for resolving any part of a problem.

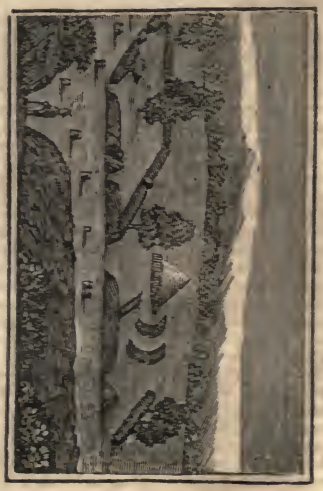
FORMULA (in Theology.) A profession of faith.

FORMULARY. A book of forms and precedents for law matters.

FORT. A small castle or strong hold; a place of small extent, fortified either by art or nature, being encompassed with a moat, rampart, and parapet, as represented underneath, to secure some high ground, or the passage of a river.

FORTIFICATION. The science of military architecture, which teaches the best mode of putting a city, town, or any other place, into a state of defence, by making works around it. A fortification is either regular or irregular: a regular fortification is built in a regular polygon, as in the subjoined figure; an irregular fortification is where the sides and angles are not uniform. A temporary fortification is that which is raised for any particular emergency, as field-works, &c. This is distinguished from a durable fortification, which serves as a permanent defence of a place. A defensive fortification is that by which a town is defended in case of a siege, in distinction from an offensive fortification, which is raised by besiegers for the attack of a place. The works of a place are those about the place, in distinction from the outworks, which are constructed before the body of the place. The principal works belonging to a fortification are, the ditch or trench made round each work; the rampart, or elevation of earth, raised along the faces of any work, to cover the inner part; the parapet, or that part of a rampart which serves to cover the troops planted there; the bastion, that part of the inner enclosure of a fortification making an angle towards the field; the counterscarp, the slope of the ditch facing the body of the place; the covert way, the space extending round the counterscarp; the glacis, the part beyond the covert way, to which it serves as a parapet; the curtain, the front of a wall between two bastions; the flank, any part of a work which defends another; the gorge, that part next to the body of the place where there is no rampart; the epaule, the shoulder of the bastion; besides the barriers, palisades, portcullis, place of arms, &c. The engraving represents one section, of which a complete fortification consists of a continuation and combination.

FORTIFICATIONS, ANCIENT. In various parts of the United States, numerous remains of ancient fortifications and mounds of earth are still found. The construction of these shows that they were built by men accustomed to labour, and who possessed considerable knowledge in the business of fortifications. They must have been erected at a remote period, as trees several hundred years old are often seen growing upon them. When and by whom they were erected is entirely unknown. The engraving represents those in the neighbourhood of Marietta, Ohio.



FORTIORI, or A FORTIORI. A term used in reasoning for any conclusion or inference that is much stronger than another.

FORTUNE-TELLER. One who tells a number of probable events, determined by some arbitrary arrangements and fortuitous permutations, which have no connexion with the parties or the events; and, therefore, a practice of error, ignorance, or imposture.

FORUM. A public place in Rome, where causes were tried and business transacted

FOSS (in Fortification.) A hollow ditch, commonly full of water, lying between the scarp and the counterscarp.

FOSSILS. All manner of things dug out of the earth, whether they be native fossils growing in and of the earth, as metals, stones, salts, earths, and other minerals; or whether they be foreign substances, as the exuviæ of sea and land animals, namely, shells, bones, teeth, &c.; or whether they be vegetables, as leaves, wood, &c. which have lain long buried in the earth.

FOUL. A sea term for the running of one ship against another.

FOUNDATION (in Architecture.) That part of a building which is under ground.

FOUNDATION (in Law.) A donation in money or lands for the maintenance and support of some community, as an hospital, a school, &c.

FOUNDER (in Law.) One who founds and endows a church, school, college, &c.

FOUNDER (in Trade.) One who casts metals in various forms, as gun-founders, bell-founders, &c.

FOUNDRY. The art of casting metals in various forms; also, the place where this business is done. Small works are cast in sand, which, being duly prepared, is put into a wooden frame; then wooden or metal models of what is intended to be cast are put into the sand so as to leave their impression, and along the middle of the mould is laid a small brass cylinder to form a chief canal for the metal to run through, from which canal run others extending to each model or pattern placed in the frame. When the moulds are fully prepared, the fused metal is poured out of the crucible into the chief canal, and thence conveyed to each pattern. After the whole has been set to cool, the cast work is taken out of the sand. The mould for very large articles is made of tempered loam, built up by degrees in a pit, into which the melted metal is made to run along a channel on the ground to the mould. The composition used in casting bells is termed bell metal. In casting types, or letters, the two things principally to be regarded are, the *matter* and the *matrices*. The matter is a compound metal, partly copper and partly lead, mixed in a certain proportion, which every letter-founder regulates at his own discretion; to this he adds a quantity of other metal, to render the composition harder. The matrices of the letters are pieces of copper, about an inch and a half long, on which the impression of the intended character has been cut, or struck by puncheons, &c. graven in relievo.

FOUNT, or **FONT.** A set or certain quantity of letters cast at one time by a letter-founder for the use of a printer. Founts are large or small, according to the wants of a printer, who orders them by the hundred weight or by the sheet. A fount of five hundred, including letters, points, spaces, quadrats, &c. is to weigh 500 lbs. A fount of ten sheets is expected to contain a sufficiency for composing ten sheets without being obliged to distribute; in the making of which the founder takes care that those sorts of letters should be best supplied for which there are the greatest calls in composition, so that scarcely any two boxes will contain the same number of letters. The proportion which the different sorts of characters in a fount should bear to each other, has been now reduced to a rule, which, by the French, is called the police.

FOUNTAIN. A natural spring of water rising out of the ground; also, a stream of water ejected through a pipe by means of a machine contrived for this purpose. Artificial fountains are various in their forms, but they all act on the principle of a pressure, either from a head of water, or arising from the spring and elasticity of the air. When fountains are formed by the pressure of a head of water, or any other fluid of the same kind, with the fountain or jet, then will this spout up nearly to the same height as that head, allowing a little for the resistance of the air, with that of the adjutage, &c. in the fluid rushing through; but when the fountain is produced by any other force than the pressure of a column of the same fluid as itself, it will rise nearly to the altitude of the fluid, whose pressure is equal to the given force that produces the fountain. The subjoined figure represents the circulating fountain, or the fountain of Hero of Alexandria, so called because it was invented by him, in which the air, being compressed by a concealed fall of water, forms a jet that appears as if it had a perpetual motion, and that the same water which fell from the jet, rose again; but, in reality, that water does not come up again, for, running down through a pipe into the bottom box, it drives out the air through an ascending pipe into the box at the top containing water, which, being pressed upon, is forced through the spout as long as there is any in it.

FOWL. The largest sort of birds, whether

domestic or wild, as geese, pheasants, partridges, &c.; also a full grown chicken or young hen.

FOWLING. The art of taking or killing birds, either by means of snares or nets, or by various devices, as imitating their voices or using decoy birds and the like.

FOWLINGPIECE. A light gun for shooting birds.

FOX. A crafty, lively animal, nearly allied to the dog, which seeks its food by night among the poultry, rabbits, and hares. They emit an odour which enables dogs to scent and follow them. The fox is borne in coats of arms, and as a charge, is supposed to denote a subtle wit by which a man has served his country.

FOXGLOVE. See DIGITALIS.

FOX-TAIL GRASS. An herbaceous plant.

F. R. S. Fellow of the Royal Society.

FRACTURE (in Mineralogy.) The breaking of minerals, or the manner in which they break, which is one of their specific characters.

FRACTURE (in Surgery.) The breaking of any bone by an external act of violence.

FRÆNUM LINGUÆ (in Anatomy.) The ligament under the tongue.

FRAME (with Painters.) A kind of square, composed of four long pieces or slips of wood joined together, the intermediate space of which is divided by little strings or threads into a great number of little squares, like the mashes of a net; used in reducing figures from great to small or from small to great.

FRANCHISE (in Law.) A privilege or exemption from ordinary jurisdiction.

FRANK FREE. A term much used in old English law, as Frank pledge freemen, who used to be pledges or sureties for the good behaviour of those who were of their community; in modern law, an exemption from paying postage for letters, which is enjoyed by members of parliament, and congress, to a certain extent.

FRANK. A French coin, worth 19 cents.

FRANKINCENSE. An odoriferous, dry, resinous substance, procured from the juniper tree in Turkey and the East Indies.

FREE AGENCY. The power of following one's inclination, or whatever the soul does, with the full bent of preference and desire.

FREEBOOTER. A soldier that serves for plunder, without pay.

FREEHOLD. That land or tenement which a man holds in fee simple, fee tail, or for term of life.

FREEHOLDERS. Possessors of a freehold estate.

FREESTONE. A sort of stone used in building, that may be cut freely in any manner.

FREEZING (in Physiology.) The fixing a fluid body into a firm and solid mass by the action of cold. The process of freezing may be artificially produced by means of the air pump, and sometimes by certain freezing mixtures, or compositions of such ingredients as when mixed with other bodies, cause them to congeal; such as snow and common salt, or muriate of ammonia, nitre and water, &c. The prodigious power of expansion evinced by water in the act of freezing, is nearly double that of the most powerful steam engines.

FREIGHT (in Commerce.) The sum of money agreed to be paid for the burden of a ship; also the burden itself, or the cargo of a ship.

FRENCH HORN. A musical instrument, of great sweetness, bent into a circle, and going two or three times round. It grows gradually larger and wider towards the end, and in some horns is nine or ten inches over.

FRENCHMAN. A native of France, the most beautiful and delightful country in Europe, distinguished for the mildness of its cli-

mate and the fertility of its soil. The country is generally level, and abounds with vineyards. The inhabitants are gay and fickle, but enlightened, active, industrious, and abstemious. Paris, the capital, contains 800,000 souls.

FRESCO. A method of painting in relievo on walls, so as to endure the weather; it is performed with water colours on fresh plaster, so that the colours incorporate with the mortar.

FRESHES. A sea term for an impetuous ebb tide increased by heavy rains.

FRET (in Architecture.) An ornament consisting of small fillets interlaced, that were used by the ancients on flat members.

FRET (in Music.) A kind of stop on some instruments, particularly base viols and lutes.

FRICTION (in Mechanics.) The rubbing of the parts of engines and machines against each other, by which means a great part of their effect is destroyed.

FRIENDLY SOCIETIES. Associations chiefly among labouring men, for affording relief to each other in time of sickness, or to the widows and children at their death.

FRIGATE. A light built ship of war, from twenty to fifty guns, fitted for fast sailing.

FRIGID ZONES. The two zones or divisions of the earth, comprehended between the poles and the polar circles. They are the north frigid zone, at the north pole, and the south frigid zone, at the south pole.

FRIT, or FRITT (in the Glass Manufacture.) The matter or ingredients of which glass is to be made, after they have been calcined or baked in a furnace. It is of different kinds, according to the quality of the glass. Crystal frit, for the best kind, is made with salt of pulverine and sand. The ordinary or common glass is made of the bare ashes of pulverine, or barilla, without extracting the salt from them; this is the second kind of frit. The third kind of frit, for green glass, is made of common ashes, without any preparation.

FRITH (in Geography.) An arm of the sea.

FRIZLING CLOTH. A process in the woollen manufacture, of forming the nap of of cloth or stuff into a number of little hard burrs or prominences, so as to cover almost the whole ground. This process is now performed by machinery.

FROG. A harmless amphibious animal having a smooth body, and longer legs than the toad; it continues to grow for five years, and is very tenacious of life. Frogs are formed from tadpoles: the feet grow, and the tail is absorbed when they leave the ponds after rain. They subsist on worms and insects; and certain parts of a green frog are eaten in France as a delicacy. Spallanzani kept some torpid in an ice-house for 3 1-2 years, and they revived in the sun.

FROG (in Farriery.) The hard projecting substance in the hollow of a horse's foot.

FROG-FISH, or FISHING FROG. A kind of fish resembling a frog in the tadpole state, that puts forth its slender horns and entices the little fish to itself, in order to seize them.

FRONT. The principal face or side of a building.

FRONTIER. The boundary of a government, which separates it from another government on the land side.

FRONTISPIECE. The ornament or picture which faces the title page in a book.

FRONTLET. A band worn on the forehead.

FRUCTIFICATION (in Botany.) The temporary part of vegetables, appropriated to their propagation, consisting of the flower and the fruit.

FRUIT (in Botany.) That which succeeds the flower; it may either be seed only, or it may be an esculent pulpy substance, as the apple or the pear; or it may be hard, like the nut, pea, &c.

FRUSH. The tender part of a horse's heel, next the hoof.

FRUSTUM (in Mathematics.) A part of some solid body separated from the rest.

FRUSTUM OF A CONE. The part of a cone that remains when the top is cut off by a plane parallel to the base; it is otherwise called a truncated cone.

FRUSTUM of a GLOBE or SPHERE. Any part of it cut off by a plane.

F. S. A. An abbreviation for Fellow of the Society of Arts.

FUCI. A genus of plants in the Linnæan system, comprehending most of those which are commonly called seaweeds, from which, when burnt, an impure alkali is procured, called kelp.

FUCUS. The name given by the ancients to a sea plant, from which a dye was procured for dyeing woollen and linen cloths of that colour.

FUGITIVE PIECES. Little pieces of composition of temporary interest.

FUGUE (in Music.) A species of composition, in which the different parts follow each other, each repeating in order what the first had performed.

FULCRUM (in Mechanics.) The centre of motion in mechanical combinations, and the name of the prop on which a lever works; but every mechanical arrangement has such a centre, whether visible or not. The forces, or momentum on each side the fulcrum of a balanced lever, are always equal. Thus, the sun and planets have a centre of momentum, or fulcrum, round which they move. The earth and moon, also, move round a common centre, or fulcrum. In machines and solid levers, the arms are as the simple distances, but in gases, as the squares of the distances.

FULLER. One who cleans and scours cloth.

FULLER'S EARTH. A species of clay remarkable for the property of absorbing oil, wherefore it is used by fullers to take grease out of cloth.

FULLING. The art of cleansing, scouring, and pressing cloths, to make them stronger, closer, and firmer, which is done by means of a water mill, called a fulling or scouring mill. These mills are nearly the same as corn mills, except in the mill-stones and the hopper. In France, corn is ground and cloth is fulled by the motion of the same wheel: cloths and woollen stuffs are sometimes fulled by means of soap, in the following manner; the cloth is laid in the trough of the fulling mill, and then the soap dissolved in pails of river or spring water is to be poured upon it by little and little. The cloth, after lying two hours in the soap, is taken out, stretched, and then returned to the trough. Upon being taken out a second time, the grease and filth is then wrung out. This process is afterwards repeated, and when the cloth has thus been brought to the quality and thickness required, it is scoured in hot water until it is quite clean.

FULMINATION. The noise which some minerals or metals make when heated in a crucible; as fulminating powder, which is made of nitre, potash, and the flowers of sulphur, triturated in a warm mortar. If this powder be fused in a ladle, and then set on fire, it will explode with a noise like thunder. If a solution of gold be precipitated by ammonia, the product will be fulminating gold, a grain of which, if held over a flame, will explode with a sharp loud noise.

FUMIGATION. A process by means of which the nitrous and other mineral acids, in a state of vapour, are dispersed through the apartments of those who lie sick of infectious fevers. As soon as the acid is properly heated, an equal quantity of pulverized nitre is added, and the mixture stirred with a glass rod. The vapour resulting from the decomposition of nitre ascends, and is by the nurses conducted to every part of the apartment, which not only abates the malignity of the fever, but effectually stops the progress of the infection.

FUNCTION. The performance of any duty.

FUNCTION (in Physiology.) The exercise of any faculty or power, as the vital functions, or those which are necessary to life.

FUNCTION (in Algebra.) An algebraical expression of a certain letter or quantity.

FUND (in Commerce.) The capital or stock of a public company.

FUNDAMENTAL NOTE (in Music.) The lowest note of the chord, to which all the rest are in some measure adapted, and by which they are regulated; it is otherwise called the key to the song.

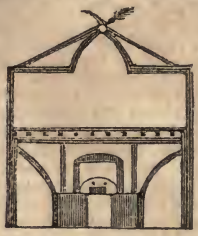
FUNDS, PUBLIC FUNDS, or STOCKS. The national debt formed into different capitals, upon which interest is payable.

FUNGI. The fourth order of the class Cryptogamia in the Linnæan system, consisting of funguses, mushrooms, truffles, &c. A fungus of this order is represented underneath.

FURLONG. A measure of length, consisting of forty poles.

FURLOUGH. Leave of absence given to a soldier or non-commissioned officer.

FURNACE. A fire place for melting, distilling, and other chymical processes, so built as to cause the fire to burn vehemently.



FUR. The coat or covering of some animals, as sables, beavers, martens, squirrels, &c. which is used in various articles of dress, either for ornament or warmth.

FURS. Tinctures in coats of arms, which are supposed to represent the furs of animals.

FURRIER. One who deals in furs, and prepares them for the manufacturer.

FURRING (in Carpentry.) The fixing thin scantlings or laths on the edges of timbers, to bring them to the even surface they were intended to form.

FURRINGS (in Carpentry.) The pieces of timber employed in making an even surface.

FURROW. A small trench cast up by the plough between the land.

FUSEE (in Clockwork.) A mechanical contrivance for equalizing the power of the main spring of a watch. The fusee on which the chain or catgut is wound, is made somewhat conical, so that its radius at every point may correspond with the strength of the spring, being greater and greater as the action of the spring becomes more and more weakened by unbending.

FUSEE (in Gunnery.) The tube fixed into a bomb or grenade shell, which is filled with combustible materials, and furnished with a quick match on the top of it. When it is used it is driven into the bomb, being cut to a length proportioned to the distance that the bomb is to be thrown, that it may be spent and the bomb break when it falls.

FUSIL. A small light musket.

FUSIL (in Heraldry.) An artificial charge, representing a spindle. It is of the same shape as the lozenge, but it is longer.

FUSION. The art of reducing bodies to a fluid state by the artificial application of heat; as in the case of metals, glass, and similar bodies. Those substances which admit of being fused are termed fusible, but those which resist the action of fire or heat are termed refractory.

FUST. The shaft of a column.

FUSTIAN. Cotton cloth with a nap.

FUSTIC. A yellow dye wood brought from the West Indies.

G.

G, the seventh letter in the alphabet, as a numeral, formerly stood for 400; as a sign, it stands for the treble cliff, or the highest of the three cliffs.

GABIONS. Baskets of willow filled with earth to make a parapet or cover.

GABLE END. The triangular end of a house, from the cornice or eaves to the top.

GADUS. The cod-fish, in natural history. There are 23 species of this genus; the most important is the gadus morhua, or common cod, which inhabits the northern seas of Europe and America, in innumerable shoals, and constitutes an important article of human subsistence. It is of all sizes, and has been known to weigh 60 or 70 pounds. It lives on small fish, particularly on crabs and others of the testaceous kind.

GAGE, or GAUGE. An instrument for ascertaining measures of different kinds, as for measuring the state of rarefaction in the air pump, or determining the variations in the barometer, or for measuring the force of the winds, &c.

GAL. An abbreviation for gallon or Galatians.

GALAXY, or MILKY WAY. A long white luminous tract which seems to encompass the heavens like a girdle, formed by innumerable stars.

GALBANUM. A resinous substance like frankincense.

GALE (among Mariners.) A storm or violent wind.

GALL, or BILE. A secretion of the gland called the liver, useful in separating the nutritive from the excrementitious part of the food.

GALL BLADDER. An oblong membraneous receptacle for the bile.

GALLERY. A passage leading to several apartments.

GALLERY (among Miners.) A long narrow passage under ground.

GALLERY (in Fortification.) A covered walk across a ditch in a besieged town, made of strong planks and covered with earth. It was formerly used for carrying a mine to the foot of the ramparts. It ought to be eight feet high and ten or twelve feet wide. The beams ought to be half a foot thick, and planks nailed on each side.

GALLEY (in Printing.) A frame into which the compositor empties his stick as often as it is filled.

GALLEY (in Shipbuilding.) A low built vessel, much used in the Mediterranean.

GALLEY-SLAVE. One condemned by way of punishment to work at the oar, to which he is chained, on board of a galley.

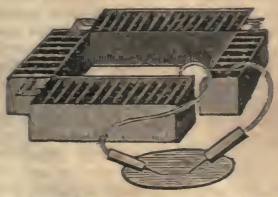
GALL-FLY. An insect which produces the galls or excrescences on the branches and leaves of trees.

GALLICISM. A form of expression peculiar to the French.

GALL NUTS, or GALLS. Excrescences on trees, which are occasioned by the gall-flies. Those which come on the oak, vulgarly called oak apples, are used in making ink, dyeing, and dressing leather.

GALLOWAY. A kind of Scotch horse, not more than fourteen hands high.

GALVANIC BATTERY. An apparatus which is employed in accumulating the electricity of galvanism by the mutual agencies of certain metallic and carbonaceous substances and peculiar fluids. See GALVANISM. This battery, as represented underneath, consists of pieces of zinc, silver, and wet cloth, disposed in threes alternately, to the number of twenty or thirty triplicates, as may be thought proper.



GALVANISM. A branch of the science of electricity, first discovered accidentally by Galvani, a professor of Bologna, from whom it derives its name. This science treats of the effects of applying metals to the nerves and muscles of dead animals, which has been found to produce strong contractions and convulsions. The first observation on this extraordinary effect of electricity was made in the laboratory of M. Galvani, when one of his assistants happened to bring the point of his scalpel to the crural nerves of a skinned frog lying near the conductor, upon which the muscles of the limb were agitated with strong convulsions. Madame Galvani, who was present at the time, was struck with the circumstance, and communicated it instantly to M. Galvani, who repeated the experiment, and found that the convulsion only took place when a spark was drawn from the conductor at the time the scalpel was in contact with the nerve. After this, Galvani continued his experiments in various ways, and ascertained that the mere agency of metallic substances, provided they were dissimilar metals, would produce such convulsions. This subject engaged the attention of experimentalists both before and after the death of M. Galvani, which happened in 1798; but none added any thing materially to his discovery except M. Volta, who repeated the experiments of the former, and found that when two pieces of metal of different kinds were placed in different parts of an animal, and were either brought into contact or into connexion by means of a metallic arc, convulsions ensued every time, and that this effect was strongest when the metals were zinc and silver, particularly when several pairs of metals were employed, having pieces of moist cloth between them. This led him to the idea of constructing a battery, for the purpose of accumulating electricity, which has since been called the galvanic battery, or voltaic pile.

The apparatus first made by Volta, in 1800, consisted of a certain number of pairs of zinc and silver plates, separated from each other by pieces of wet cloth, in the order of zinc, silver, wet cloth, zinc, silver, wet cloth, in regular succession. The silver plates were chiefly pieces of coins, the plates of zinc and the pieces of wet cloth being of the same size. He found this much more powerful when the pieces of cloth were moistened with a solution of common salt instead of pure water, and an apparatus thus prepared was found to possess the power of giving a very smart shock, similar to that of a small electric jar; and this effect took place as often as a communication was made between each end of the pile, and as long as the pieces of cloth remained moist: an improvement was made on this apparatus by Mr. Cruickshank, of Woolwich, which was denominated a galvanic trough, and consists of a box of baked wood, in which plates of copper, or of silver and zinc, soldered together at their edges, are cemented in such a manner as to leave a number of water-tight cells, corresponding to the number of the series; this serves to remedy the defect of the voltaic pile, which, on account of the loss of moisture, loses its electrical action in a few days; but by Mr. Cruickshank's contrivance its activity may be renewed by filling the cells with the proper saline fluid.

GAMBOGE. A yellow resinous substance used by painters. It is the produce of a

tree native of Cambogia or Cambaja, in the East Indies.

GAME. All sorts of birds and beasts that are objects of the chase. The laws which particularly protect this sort of property are known by the name of the Game Laws. By these laws, in England, certain qualifications of property are required to give a person the privilege of being allowed to kill game; and penalties are imposed on all persons who kill game either without such qualification or at improper seasons; likewise, the sale of game is prohibited under every circumstance. Attempts have been repeatedly made in the English parliament to procure a repeal, either wholly or in part, of these laws, which are thought to be oppressive in their operation.

GAME. Any sport or amusement which affords a subject of contest, and a display of skill or superiority.

GAMECOCK. A cock bred to fight.

GAMESTER. One who is viciously addicted to playing at games.

GAMING. The wanton and extravagant playing at games for purposes of gain.

GAMUT (in Music.) The table or scale of notes laid down by Guido, and marked by the monosyllables ut, re, mi, fa, sol, la; also the first note in the scale.

GANG (among Mariners.) A select number of a ship's crew appointed on any particular service.

GANG (in the Police.) A number of persons who go or herd together for wicked purposes.

GANGLIONS. Small, hard, knotty tumours, formed on the nervous and tendinous parts.

GANGRENE. A mortification in its first beginning.

GANGWAY (among Mariners.) The name of several ways or passages from one part of a ship to another.

GANTLOPE, or GANTLET (in Military Affairs.) An old punishment in which the criminal, running between the ranks, receives a lash from every man.

GAOL (in Law.) A prison for the confinement of criminals or debtors.

GAOL DELIVERY. The clearing of a prison by a judicial condemnation or acquittal of the prisoners.

GARB. A wheatsheaf, signifying peace and plenty, in coats of arms.

GARDEN. A plot of ground enclosed and cultivated with extraordinary care, and furnished with the fine kinds of plants and flowers, for pleasure and use.

GARDENING. The process of tilling a garden and keeping it in order.

GARDENING, History of. Gardening is one of those domestic arts so essentially connected with the refined enjoyments of mankind, that with a garden has ever been associated every idea of cultivation and pure pleasure. From Holy Writ we learn that our first parents, before their fall, passed their lives in a garden, and their posterity, although, according to the denunciation of their Maker, doomed to till the ground with the sweat of their brow, nevertheless have at all times endeavoured to sweeten their labour by bringing home to themselves the enjoyments of cultivation within the narrow circle of their own habitation. The accounts of gardens among the ancients are confined to those of princes or great men, as the garden of Solomon and the garden of Alcinous the Phæacian king, which is minutely described by Homer in his Odyssey. The hanging gardens of Babylon, particularly spoken of by Diodorus and Strabo, may be reckoned among the wonders of art. Each side extended four hundred feet, so that the area of the base was nearly an acre. They rose with terraces, constructed one above another, and supported with pillars to the height of four hundred feet. These terraces were formed of stone, covered with reeds, and cemented with bitumen, over which was laid a double row of bricks, and then a layer of earth of sufficient depth for plants to grow in it. The Persian kings also displayed their magnificence in their gardens, which they took care should contain all that was useful as well as beautiful. Their trees were ranged in straight lines and regular figures, and the margins of the walks were lined with tufts of roses, violets, and other odoriferous flowers. Firs and planes were their favourite trees.

The Greeks appear to have derived their ideas of gardening from the Persians, if we may judge from the allusions of writers to this subject. Xenophon particularly admires the garden of Cyrus at Sardis. The narcissus, the violet, the rose, the ivy, the pines, and other plants chosen by the Persians, either for their beauty or their fragrance, were the theme of praise among the Grecian poets and philosophers. They also consulted shade, fresh breezes, and the beauties of verdant scenery, as we learn from the vale of Tempe described by Ælian, and the shady groves of Athens described by Plutarch. With the beauties of nature they also associated those of art, particularly such as derived an interest from their religious or social attachments. Hence we find that their gardens were decorated with temples or altars dedicated to their gods, or the tombs of their ancestors, or of great men whose memory they held dear. Their favourite fruits were the vine, the fig, the pomegranate, and the melon.

The first garden mentioned among the Romans is that of Tarquinius Superbus, which abounded with flowers, chiefly roses and poppies. As the Roman people extended their conquests, and their intercourse with other nations became more frequent, they increased in luxurious and expensive indulgences,

which they displayed in the decorations of their gardens. Lucullus, the conqueror of Mithridates, who introduced from Asia the cherry, the peach, and the apricot, first gave the Romans a specimen of Asiatic grandeur, in his garden near Baiæ, in Naples, which was remarkable for prodigious works of art, as artificial mountains, immense pieces of water, and numerous costly embellishments. This gave that tone of artificiality to the Roman gardens which was for so many centuries after retained in Europe. Slopes, terraces, a wilderness, shrubs methodically trimmed or cut into certain shapes, a marble basin, artificial fountains, or a cascade falling into the basin, bay trees alternately planted with planes, a straight walk, from which issued others, parted off by hedges of box, and apple trees, with obelisks placed between every two; these were the ingredients of a Roman garden, as described by Pliny the younger, in which was wanted nothing but the decoration of a parterre to make a garden in the reign of Trajan to serve for a description of one in the seventeenth century. A more correct taste in the art of gardening has obtained within the last century. Nature now derives every possible assistance from art without losing any thing of her simplicity.

GARLAND. An ornament of flowers made for the head or other purposes.

GARLAND (among Mariners.) A collar of rope wound up about the head of a main mast, to keep the shrouds from galling.

GARLIC. A bulbous root, consisting of many small tubercles included in its coats. It has a strong smell and an acrid taste, but is much used for food.

GARNET. A red gem of a brownish tint, resembling the seed of a pomegranate.

GARNISHMENT (in Law.) A warning given to any one for his appearance in court.

GARRISON. A place of defence occupied by troops; also, the troops themselves.

GARTER (in Heraldry.) The principal badge of the highest order of knighthood in England, called the Most Noble Order of the Garter.

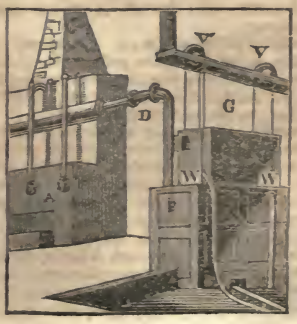
GARTER, Order of the. An order of knights instituted by Edward III. which consists of twenty-six knights companions. The habit and ensigns of this order are the garter, mantle, cap, and collar. The badge of the order is the image of Saint George, called the George.

GAS. A chymical term derived from the German geist, spirit, denoting an elastic aerial fluid, of which there are different kinds, some being acid, as carbonic acid; some alkalies, as ammonia, &c.

GAS LIGHT. Light produced by gas burning in lamps, &c. This gas, which is a combination of oxygen and hydrogen, is carried away by pipes and burnt at the orifice of escape. It is produced either from pit coal, whale oil, or resin. The process for producing coal gas is as follows. The coal, being broken to a convenient size, is placed in oblong cast iron retorts, ranged in furnaces to keep them at a red heat, and all the volatile products are conveyed by a common tube into a condensing vessel, which is kept cool by being immersed in water. In the condenser are retained the water, tar, and other condensible vapours, while the gaseous products, namely, the carburetted hydrogen, the sulphuretted hydrogen, and the carbonic oxide, and acid are passed through strata of slaked lime, by which the sulphuretted hydrogen and carbonic gases are absorbed, and the carburetted hydrogen and hydrogen gases in their purified state are transmitted into the gasometers, from which the several pipes are supplied that convey the gas to the lamps. The best kind of coal for distillation is that which contains most bitumen and least sulphur.

After the discovery of obtaining gas from coal, attempts were made to extract it from other substances. The method of procuring it from oil is said to have orignated in an attempt made in 1814 to convert coal tar into gas. Since that period numerous works have been constructed in different parts of the country for the manufacture of oil gas, which, in the opinion of many, is preferable to the coal gas.

GASOMETER, or GAZOMETER. A reservoir for holding gas after it has been evolved in the retorts, whence it is pressed into pipes for consumption. It consists of a vessel inverted in water, and the gas passes under it, and raises it up by its elasticity or momenta, till it is full, and when wanted, weights are placed upon it. D is the pipe from the retort, or furnace, A; F is the tank filled with water; G is the gasometer or vessel inverted; and V the pulleys by which the weight, W, regulates the gasometer in ascent and descent. It is made of thin tinned iron plate, and mostly provided with some contrivance for measuring the quantity of gas it contains.



GASTRIC JUICE. A fluid separated by the capillary vessels in the stomach, and serving as the principal solvent of the food. This juice in a healthy subject is inodorous, of a saltish taste, and limpid like water.

GAVELKIND. A tenure or custom in Kent, England, whereby the lands of the father were divided equally at his death among his sons.

GAUGING. The art of measuring the capacities of all kinds of vessels.

GAUNTLET. An iron glove for the hand, which was formerly used in single combat. It is borne in coat armour.

GAUZE. A very thin sort of silk.

GAZELLE. An animal partaking the nature of both goat and deer, but forming a distinct kind; it is so very fleet that it is hunted only by the falcon and the ounce. Of all animals, it has the most beautiful eye; eastern poets compare the eyes of their mistresses to those of the gazelle.

GAZETTE. The name of a Venetian coin, about a half-penny in England, or a sous in France, and transferred to the first printed newspaper, because sold at that price, and from this origin Gazettes spread over Europe, and newspapers have now become almost necessaries of life, and as useful as agreeable. The first Gazette in England was published in 1665, at Oxford, where the court then was.

GAZETTEER. A writer or publisher of a Gazette; also, the title of a geographical dictionary.

GELATINE, or JELLY. An animal substance, soluble in water, and capable of assuming an elastic or tremulous consistence when cooled, and liquefying again by the application of heat, as glue and isinglass.

GEM. A precious stone; or a sort of siliceous earth, consisting of silica and alumina, with a small portion of lime and oxide of iron. The gem is remarkable for its hardness and internal lustre. Under this name is comprehended the diamond, ruby, sapphire, hyacinth, beryl, garnet, chrysolite, &c. To these have been added rock crystals, the finer flints of pebbles, the cat's eye, the oculus mundi, the chalcedony, the moon stones, the onyx, the cornelian, the sardonyx, agate, &c.

The imitation of antique gems, by taking the impressions and figures upon them, in glass of the colour of the original gem, or on sealing wax or brimstone, has been practised at different times by persons who, in respect to the first method of taking them on glass, have kept the art to themselves, and suffered it to die with them. But the process adopted by Mr. Homberg, which has also been communicated by him to the world, is highly esteemed for the perfection to which he has brought the art. From the engraved gems of the king's cabinet, he took such exact resemblances of the originals as sometimes to deceive the nicest judges, who mistook them for the true antique stones. His method consists in taking the impression of the gem in a very fine earth, and then conveying the impression from the earth to a piece of half melted glass.

GEMINI, the TWINS. A constellation and sign in the zodiac, marked thus ♊.

GEN. An abbreviation for General and Genesis.

GENDARMES, or GENS D'ARMES. A select body of horse in the French army, who are now much employed by the police.

GENDER (in Grammar.) A distinction in nouns to mark the sexes; genders are either masculine, for the male sex; feminine, for the female sex; or neuter, for those which are of neither sex.

GENEALOGY. A series or succession of ancestors; also, an account of the relations and alliances of any person or family.

GENERAL (in Military Affairs.) An officer in chief, to whom the command of troops is intrusted; also, a particular beat of drum in the morning to give notice to the foot to march.

GENERALISSIMO. The supreme general or commander in chief of an army.

GENERAL ISSUE (in Law.) That plea which traverses or denies at once the whole declaration or indictment.

GENERAL OFFICERS. All officers above the rank of lieutenant-colonel in the line.

GENERATING (in Geometry.) A term for a line or figure which by its motion produces any other figure.

GENERIC CHARACTER (in Natural History.) The character which distinguishes the genera or general kinds of plants, animals, &c. from each other. This character belongs to all the species of the same genus or kind.

GENERIC NAME (in Natural History.) The name of any genus or kind of animal, plant, or mineral. This name can be described only by describing the generic character.

GENET. An animal of the weasel kind, resembling the civet cat in its musk smell.

GENEVA. See GIN.

GENITIVE CASE. The second case in Latin and Greek nouns, which denote possession. It is marked in English by *s* with an apostrophe, thus (*'s*.)

GENII. Good or evil spirits, much thought of in the eastern nations. The Tales of the Genii profess to give an account of their proceedings and dealings with mankind.

GENTILES. A name given by the Jews to all who were not of the twelve tribes of Israel; among Christians, it is the name of all heathens who have not embraced the Christian faith.

GENTLEMAN. A man of probity, good manners, and intelligence. Anciently, one above the state of a yeoman.

GENTRY (in English Law.) The order and rank of gentlemen, descended from ancient families, that had always borne coat armour.

GENTOO. A native of Hindostan.

GENUS (in Natural History.) A subdivision of a class or order of natural objects, animal, vegetable, or mineral, and having under it different species or varieties.

GENUS (among Logicians.) That which is common to a number of individuals; the summum genus, or highest genus, is that which appertains to the greatest number of individuals, as substance, which belongs to all material.

GEOCENTRIC. Being concentric with the earth, or having the earth for its centre; a term applied to a planet in its orbit.

GEOGRAPHICAL MILE. The 60th part of a degree.

GEOGRAPHY. The science which treats of the earth as a habitable world, comprehending a description of the whole globe, together with an account of all its parts, limits, inhabitants, &c. Geography is either general or particular. General geography comprehends the knowledge of the earth in general, and the affections common to the whole globe, as its figure, magnitude, motions, circles, winds, tides, meteors, divisions into land and water, &c. Particular geography has respect to particular countries, showing their boundaries, figure, climate, seasons, inhabitants, arts, customs, language, history, &c. When it respects regions, districts, or parts of countries, it is called chorography, and when particular cities, towns, or villages, &c. it is called topography. Particular geography is also distinguished into ancient geography, when it treats of the countries and places existing among the ancients; modern geography, when it treats of modern places; the geography of the middle ages, which treats of places that flourished in the middle ages; and lastly, sacred geography, which treats of places mentioned in the Bible.

The earth, considered as a planet, is supposed to be marked by circles corresponding to those which the sun apparently describes in the heavens, as the horizon, which divides the sphere into two parts or hemispheres, the one upper and visible, the other lower and invisible; the equator, which is equidistant from both the poles, and divides the globe into northern and southern hemispheres; the azimuth, or vertical circles, which intersect each other at the zenith and nadir; the meridian, which crosses the equator at right angles, and from which the distance of places east and west is reckoned; the parallels of latitude, small circles supposed to be parallel to the equator, which show the latitude of places, or their distance north and south from the equator; the arctic and antarctic circles, two circles at the distance of twenty-three degrees and a half from the north and south poles; the two tropics, namely, the tropic of Cancer and the tropic of Capricorn, the first north and the second south, twenty-three degrees and a half distant from the equator; to these might be added the hour circles, or the twenty-four circles passing through the equator, and corresponding to the twenty-four hours of the day.

From the diversity in the length of the days and nights, geographers divide the globe into certain districts, called climates, measured either by hours or half hours; and from the effects of light and heat upon the earth in different parts, it is distinguished into five zones, namely, one torrid or burning zone, between the tropics; two temperate, between the polar circles and the tropics; two frigid or frozen zones, between the polar circles and the poles. The inhabitants of the earth, as to their relative situation in regard to each other, are distinguished into the antipodes, who live directly opposite to each other; the antoeci, who live under the same meridian, but opposite parallels of latitude; the perioeci, who live under the same parallels of latitude but opposite meridians.

The earth is naturally divided into land and water, and, according to some computations, about three fourths of it is occupied by water, and the remaining fourth by land. The land is distinguished into continents, or large portions not separated by any sea, as the four great continents, Europe, Asia, Africa, and America, which are the four quarters of the world; islands, smaller portions, entirely surrounded by water, as Great Britain, Ireland, &c.; peninsulas, or tracts of land almost surrounded by water, as the Morea, in Greece; isthmuses, or necks of land joining two continents, as the isthmus of Suez, joining Africa to Asia; promontories, or capes, high portions of land stretching out into the sea, as the Cape of Good Hope; mountains, or elevations of the earth's surface, such as the Alps and Pyrenees in Europe, the Caucasus and Uralian Mountains in Asia, and the Andes in America. The water is distinguished into oceans, which are vast collections which separate the continents from each other, as the Pacific and Atlantic Oceans; seas, or smaller collections of water, as the Indian Sea, Black Sea, &c.; gulfs, parts of any sea surrounded nearly with land, as the Gulf of Venice; if they have a wide entrance they are bays, as the Bay of

Biscay; straits, narrow passages joining two seas, as the Strait of Gibraltar; lakes, large collections entirely surrounded by land, as the Lake of Geneva; rivers, streams of water which have their source in some spring, and empty themselves into some other river or piece of water. The principal rivers, as to their magnitudes, are the Amazon, Senegal, Nile, St. Lawrence, La Plata, Mississippi, Volga, Oronooko, Ganges, Euphrates, Danube, Don, Indus, Dnieper, and Dwina, but if estimated according to the length of course which they run, their order will be rather different, but the Amazon is the largest in every respect.

The earth is politically divided into countries, which, according to their government, are distinguished into empires, if they are of great extent, as the Russian and Austrian empires; or kingdoms, as the kingdoms of Great Britain, France, Spain, &c.; or states, as the states of Holland and America; or republics, as the republics of Venice, Genoa, &c. Under this head geography treats of the subdivisions of each country into provinces, cities, towns, &c.; also, of the number of inhabitants, the nature and produce of the soil, the animals peculiar to each place, the state of the arts, manufactures, commerce, &c. which constitute the wealth of each country, and is comprehended under the name of statistics. To all this may be added an account of curiosities, natural and artificial, as volcanoes, caverns, canals, springs, fountains, and the like. Besides, geography treats not only of the earth's surface, but also of the affections which it is exposed to from the waters of the ocean which produce the flux and reflux of the tide, and the currents belonging to particular seas, as in the Mediterranean and Euxine seas; likewise, of the winds which blow in particular manners and directions, such as the monsoons, or trade winds, which blow for some months in the year one way, and the rest another; and, lastly, the meteorological peculiarities of each country, such as regards the degree of heat and cold, the quantity of rain which falls in particular places, or within a given period, the duration of frosts, and other particulars respecting the climate, and its effects upon the surrounding objects.

Geographical descriptions are, moreover, illustrated by engraved delineations, which, when they represent an ocean, sea, or any piece of water, is called a chart, but when they represent any parts of the earth generally are termed maps. In all maps the north is at the top, and the south at the bottom, the east on the right, and the west on the left. Maps are always laid down according to a certain scale, taken from the degrees of latitude, which are marked on the east and west side of the map, those of longitude being marked on the north and south side. As the earth is a globe, a map of the whole earth must necessarily consist of two parts, both sides of the globe not being visible at once; accordingly, in a universal map the right hand circle shows the old world, that is, Europe, Asia, and Africa, and the left hand circle the new world, or America. Upon the general map are marked the circles correspondent to those of the sphere, as the equator, &c. Particular maps, being parts of this globe, retain the meridians and parallels belonging to the particular part, which are made smaller or larger according to the size of the map, and the distance of the places mentioned are proportioned to the breadth of the parallels as nearly as they can be.

In maps the sea is denoted by an open space; the thick shadowing denotes the sea-coast; rivers are marked by shadowed serpentine lines; if large, by double and treble lines, made strong and black; roads by double lines; divisions of countries by dotted lines, and sometimes distinct colours, those for kingdoms and provinces being larger than the rest; forests are represented by trees; mountains by rising shadows; sands by dotted beds; lakes by shadowed coasts; rocks by pointed things sticking up sharp in the sea; the course of the winds by arrows. The names of the villages are written in a running hand, those of towns in a Roman character, those of cities in small capitals, and those of provinces in large capitals. Cities or great towns are made like small houses, with a little circle in the middle of them, but smaller towns or villages are marked only with little circles; bridges by a double line across the river. In some maps, particularly old maps, cities, as the sees of bishops, were marked with a cross or mitre, and those of archbishops with a double cross; universities with a star or a caduceus; abbeys with a crook or pastoral staff; fortresses with an angle, as of a bastion; castles with a little flag; gentlemen's seats with a single house only, &c.

The apparatus called the terrestrial globe, has a complete map of the earth drawn on its surface, with the several imaginary circles, and is, moreover, fitted to illustrate the movements of the earth as a planet, the latitudes, longitudes, and distances of places, the hours of day and night in different parts, with a number of other interesting problems.

GEOGRAPHY, History of. The study of geography, as far as it was connected with or depended upon astronomy, in all probability began and kept pace with it. Thales, the Grecian astronomer, constructed a globe, representing the land and sea upon a table, which art he derived from the Egyptians, among whom maps were in use even as early as the days of Sesostris. This conqueror is said to have represented in this manner the conquests he made, and the countries he marched through. That the Israelites practised the art of geography at an early period, is clear from the account we have in Scripture of Joshua having sent men to walk through the land of Canaan,

which they described in seven parts, in a book. The first map among the Greeks on record is that of Anaximander, which is probably referred to by Hipparchus, under the designation of the ancient map. Geographical descriptions were, however, prior to this, for the works of Homer abound with the names of places, and an account of several particulars respecting them. The first professed writer on the subject of geography was Scylax, if the author of the Periplus now extant be the same as the philosopher of that name mentioned by Herodotus. Herodotus, the historian, has interspersed his work with a minute geographical description of the places which occur in the course of his narrative; and geographical notices are also to be found scattered in the writings of Thucydides and Xenophon. The conquests of Alexander doubtless increased the desire to know more of the habitable world, which that prince encouraged by sending Nearchus on a voyage of discovery in the Red Sea, a description of which is still extant. About the same time flourished the geographer Dicearchus, of whose works some fragments remain.

Eratosthenes is said to have been the first who attempted to reduce the science of geography to a system, by the application of astronomical principles. He introduced a regular parallel of latitude, which began at the Straits of Gibraltar, and proceeded through the isle of Rhodes to the mountains of India, noting all the places it passed through. He drew this parallel not by the sameness of the latitude, but by observing where the longest day was fourteen hours and a half, which Hipparchus afterwards found to be thirty-six. Eratosthenes also drew maps of the countries then known, with as much accuracy as his scanty information would enable him, but they contained little more than an imperfect representation of the states of Greece and the dominions of Alexander's successors. He was ignorant, as Strabo informs us, of Gaul, Spain, Germany, Britain, Italy, and the coast of the Adriatic, and had only a faint idea of the western parts of Europe. Hipparchus improved upon the labours of Eratosthenes, and determined both the latitudes and longitudes from celestial observations.

Under the Roman emperors geography acquired an increasing interest, from the perpetual accessions which were made by conquest to the empire. Accordingly, we find the number of geographical writers to be greatly increased, and their writings to be more correct and particular. Besides Pomponius Mela, who, in his Cosmographia, has given a neat and comprehensive account of the known world, and Dionysius Perigetes, who has written a system of geography in verse, Strabo has left a work on this subject, which, in point of methodical arrangement and extent of information, exceeded any thing that had been hitherto published. This was followed, after the interval of more than a century, by the great work of Ptolemy on this subject, in the execution of which he took astronomy to his aid for determining the situation of places. He fixed the latitudes and longitudes of all the principal places in the known world, and expressed them in degrees, after the manner of Hipparchus, making his calculations from the proportions of the gnomon to its shadow, as observed by different astronomers at the time of the equinoxes and solstices, and deduced from these the length of the longest days. He also measured and computed the distances of the principal roads mentioned in the different surveys and itineraries which had been made at different times by order of the emperors, and compared them with such reports as he could gather from travellers. In this manner did Ptolemy execute his system of geography, which, as a work of science, has deservedly held the first rank among the works of the ancients, and, considered as the labour of one man, was never surpassed, and scarcely ever equalled.

With the exception of the Geographical Dictionary of Stephanus Byzantinus, in the fifth and sixth centuries, and the scattered geographical notices interspersed in the works of the Byzantine historians, the subject of geography was neglected until the thirteenth century, when John Sacro de Bosco published his treatise on the sphere, which contained an account of the earth as far as it was connected with the doctrine of the sphere. Nothing farther was done towards the advancement of this science until the discovery of the New World, when geographical knowledge received continual accessions by new discoveries, and the spirit of investigation and research which they awakened. Since that time the writers on geography have been exceedingly numerous. Among those who have treated it in immediate connexion with astronomy and the other sciences, may be reckoned Piccioli, in his Geographia et Hydrographia Reformata; Deschales, in his Mundus Mathematicus; and Wolfius, in his Elementa Matheseos. Among those who have written on ancient and modern geography, Cellarius, Cluverius, and Baudrand are the most distinguished: the most esteemed modern works on this subject are the systems of Busching, Salmon, Guthrie, Pilkington, Playfair, Myer, Morse, Malte-Brun, &c.

GEOLOGY. The science which treats of the structure of the earth, or of the different minerals, stones, earths, &c. which enter into its composition, and the manner in which they are disposed in regard to each other. This science has of late attracted particular notice, and from the important facts which have thus been brought to light, the subject has justly awakened a considerable interest. Geology may be considered under two heads,

namely, first, as regards those bodies which naturally form constituent parts of this globe; and, secondly, as regards those foreign bodies which have been buried in the earth and partly amalgamated with it. These are now distinguished by the name of fossil or organic remains. In the consideration of these two branches of the science of geology, it will appear that the earth has undergone such changes, since its original formation, as nothing but a universal deluge could have produced, and in this point of view it furnishes to the believer a wonderful and gratifying confirmation of the Scripture account of that great and miraculous convulsion.

The study of geology having been most effectually pursued by inquiring into the structure of mountains, it has been on that account likewise designated by the name of orychthiology. Mountains have been found by geologists to consist, at a considerable depth, of strata regularly disposed, which have been classed under the heads of granite, gneiss, mica slate, clay slate, primitive limestone, primitive trap, serpentine porphyry, syenite topaz, quartz rock, primitive flinty slate, primitive gypsum. These are altogether denominated primitive rocks, which have no organic remains, and appear to have been undisturbed. But in the strata above these there are evident signs of violent fractures caused by the action of waters. In this manner valleys have been excavated, and a separation thus occasioned in strata that once evidently formed one continuous range. Such water-worn fragments have, from the cause of their existence, been denominated diluvium, to distinguish them from other debris produced by causes still in operation, such as the alluvium or the accession to lands by inundations, torrents, and the like, as also the volcanic rocks formed by the eruptions of mountains. Besides the rocky fragments and insulated hills above mentioned, the strata above these primitive rocks contain also organic remains. In those immediately above, called transition rocks, fossil remains of corals and shells are found in small quantities, as also in the carboniferous limestone that lies next to these rocks. The coal strata, which follow, abound with vegetable remains of ferns, flags, reeds of unknown species, and large trunks of succulent plants, which are altogether unknown either in description or in nature. Above the coals are beds containing corals and shells, which, like those in the strata below, are characterized by this peculiarity, that in some places they are to be found in families, and that in other places there will be found beds of marine shells in one layer, and those peculiar to fresh water in another layer, resting one over the other in alternate succession. In the highest of the regular strata, called the crag, will be found the shells at present existing in the same coast, and, lastly, over all these strata is a covering of gravel, which is remarkable for containing the remains of numerous quadrupeds, as the bones, horns, teeth, shells, scales, &c. These animals are for the most part either foreign to the climates where their remains are found, or they are of a larger size than any now known, or they are altogether different from any species of animal hitherto known or mentioned. Among those animals whose remains have been found in countries far distant from the places which they inhabit, are the elephant and the rhinoceros, numerous remains of which have been found in England, France, Germany, Italy, and other parts of Europe, but still more in Siberia, where, throughout the whole extent of that country, there is scarcely a river or a shore in which have not been found the bones of elephants and other animals. Near the river Willioni, in the eastern part of Siberia, has been dug up a rhinoceros still possessing the skin, fat, and muscles; and fossil ivory has been procured in immense quantities in the countries nearest to the arctic circle. So numerous are the remains that have already been dug up, as to form immense collections in the cabinets of the great, particularly in that of the Prince of Hesse Darmstadt and the Elector of Manheim. Naturalists have also been enabled, in part, to ascertain the species of these animals, at least as far as regards the rhinoceros, which is of the double horned kind; but in regard to the elphantine remains, although very numerous, it is not so certain whether they are of any known species or otherwise. As to the animals differing in size from those of their own species at present, Ireland furnishes specimens of deer that have been dug up of an extraordinary magnitude; and in Scotland, a kind of oxen has been found bigger than the largest species existing at present. Of animals altogether unknown, both North and South America, and other parts, furnish several examples, as the mammoth, the mastodon, and other nameless animals of a prodigious size.

This remarkable fact, of the fossil remains of animals, did not escape the notice of the ancients, for Xenophanes, above four hundred years before the Christian era, is said to have discovered the remains of some marine animals imbedded in rocks, from which he absurdly inferred the eternity of the world. Heredotus also ascertained the existence of fossil shells, from which, with much greater reason, he was led to conclude that the sea had once occupied those parts. Also in the pyramids, the stones were found to contain the remains of animals, of which there existed in his time no corresponding species. Strabo, who saw these fragments of stone lying about the pyramids, took them to be petrified lentils, that had been used by the workmen; at the same time this writer, as well as Pliny and others, attest the existence of such animal ra-

mains, and in a high state of perfection. In the Natural History of Pliny many fossil remains are spoken of, as the bucardia, resembling an ox's heart; the glossopetra, having the form of a tongue; the horns of ammon, resembling a ram's horn; the lepidotes, like the scales of fishes, &c.

GEOMETRY. That branch of mathematics which treats of the properties of extension and figure. Geometry is distinguished into the theoretical and the practical. Theoretical or speculative geometry treats of the various properties and relations in magnitudes, &c. Practical geometry comprehends the construction of figures, the drawing of lines in certain positions, as parallel or perpendicular to each other, &c. Speculative geometry is again distinguished into elementary geometry, that treats of the properties and proportions of right lines and right lined figures, as also of the circle and its several parts; and the sublime or transcendental geometry, that treats of the higher order of curves, &c.

The simple principles of geometry are explained in definitions and axioms. The following are the most important definitions: A point is that which has neither length, breadth, nor thickness; a line has length without breadth or thickness; a superficies, or surface, has length and breadth only, the boundaries of which are lines; a solid has length, breadth, and thickness; the boundaries of a solid are surfaces. A straight line lies evenly between the parts, parallel lines keep at the same distance from each other when extended indefinitely. A perpendicular line is perpendicular to another line. An angle is formed by the meeting of two lines in a point; it is a right angle when formed by one line falling perpendicularly on another line; an obtuse angle, when it is greater than a right angle; and an acute angle when it is less. A figure is a space included within one or more boundaries, called sides; it is rectilinear when contained by right lines, and curvilinear when contained by curved lines; a rectilinear figure contained by three right lines is a triangle; if by four, quadrilateral; if by five, a pentagon; if by six, a hexagon, &c.; if by more than twelve, a polygon.

Triangles are distinguished according to the length of their sides, into equilateral, having all the sides equal; isosceles, having two sides equal; and scalene, having all the sides unequal; or, according to their angles, into right angled, if they have one right angle; obtuse angled, if they have one obtuse angle; and acute angled, if they have all acute angles. Every quadrilateral or four-sided figure is called a parallelogram when it has its sides parallel, and a rectangle when all its angles are right angles. Four-sided figures are, moreover, distinguished according to their sides and angles, into a square, which has all its sides equal and its angles right ones; an oblong square, which has its opposite sides equal and its angles right ones; a rhombus, having all the sides equal, but the angles not right ones; and a rhomboid, having the opposite sides equal, and the angles not right ones. When a quadrilateral has none of its sides parallel it is a trapezium, and when only two of its sides parallel a trapezoid. The diagonal is the right line which divides a parallelogram into two equal parts. The base of a figure is the side on which it is supposed to stand. The vertex is the extreme point opposite to the base; the altitude is the perpendicular distance from the vertex to the base. The area of a figure is the quantity of space contained within its boundaries.

Of curvilinear figures in common geometry is the circle, which is a plane figure bounded by a curve line called the circumference, which is equally distant from a point called the centre. The diameter of a circle is a straight line drawn from one side of the circumference to the other, through the centre, so as to divide it into two equal parts. The radius of a circle is a straight line drawn from the centre to the circumference: the segment of a circle is a part cut off by a line called the chord. The circumference of every circle is supposed to be divided into 360 equal parts, called degrees, every degree into 60 parts, called minutes, and every minute into 60 parts, called seconds.

Solids are distinguished into a prism, the sides of which are parallelograms, and the two ends or bases are similar; polygons, parallel to each other; the cube, consisting of six equal square sides or faces; the pyramid, having any plane figure for its base and triangles for its sides, all terminating in one common point or vertex; the cylinder, which is generated by the rotation of a rectangle about one of its sides supposed to be at rest; the cone, a solid having a circular base, and its other extremity terminated in a single point or vertex. Those curves which are formed by the intersection of a plane with a cone form the subject of conic sections, which is a branch of sublime geometry.

Ratio is the mutual relation of two magnitudes of the same kind to one another, in respect to quantity, as 2 to 1, which is double; the former of these is called the antecedent, and the latter the consequent: proportion is the similitude of ratios, as 6 is to 2 as 3 is to 1, that is a triple ratio in both cases.

An axiom is a plain truth that wants no demonstration, as that the whole is greater than a part. A postulate is that which requires to be granted as true before another thing can be demonstrated. A proposition is that which proposes something to be done or demonstrated; it is a problem when it proposes any thing to be done, as to divide a given line into two equal parts, or to raise a perpendicular,

&c.; and a theorem when it proposes something to be shown, as that triangles of the same base and altitude are equal to each other, or that all the angles in the same segment of an arch are equal, &c.

GEOMETRY, History of. The origin of geometry is ascribed by Herodotus to the Egyptians, who, in consequence of the inundations of the Nile, which carried away all their landmarks, were under the necessity of distinguishing and laying out their lands by the consideration of their figure and quantity, whence the word geometry in the Greek signifies literally land-measuring. The Greeks, who cultivated this science more than any other people, doubtless learned the rudiments from the Egyptians; for Thales, who travelled into Egypt and acquired a sufficient knowledge of astronomy to calculate, must also have first become acquainted with the principles of geometry to assist him in his astronomical inquiries. Pythagoras, the pupil and friend of Thales, distinguished himself by his discoveries in arithmetic, as well as geometry. He invented the multiplication table, called after him the Abacus Pythagoricus; and in geometry he discovered the thirty-second and forty-seventh propositions in the first book of Euclid's Elements. Soon after this flourished Anaximander, Anaximenes, Anaxagoras, Cleostratus, Ænopides, and Zenodorus, all celebrated geometricians, of whose works nothing remains except of the last. They were succeeded by Hipparchus, who rendered himself celebrated by the quadrature of the lines called after him, as also by his attempt at the quadrature of the cube, which was a matter of great interest among the ancient mathematicians, and is said to have taken its rise in an answer of the oracle at Delphi, which, when consulted on the occasion of some public calamity, answered, 'Double the altar,' which was an exact cube. Notwithstanding the failure of Hipparchus, others renewed the attempt, which, although it proved unsuccessful as to that particular object, nevertheless is said to have led to the discoveries of other geometrical properties, as the conchoid of Nicomedes, the cissoid of Diocles, and the quadratrix of Dinostratus. This latter geometrician was the follower and friend of Plato, whose devotion to the science of geometry was such that he caused it to be inscribed over the door of his school, 'Let no one enter here who is ignorant of geometry.' To Plato we are indebted for that branch of geometry known by the name of conic sections, of which his scholar, Aristeus, is said to have composed five books that are highly spoken of by the ancients, but are not now extant. Eudoxus and Menechemus were also disciples of Plato, and distinguished themselves, the former in geometry as well as astronomy, the latter by his application of conic sections to many problems. After an interval of ninety years from their time, that is, about three hundred years before Christ, flourished Euclid, who, by collecting and methodizing all the principles of geometry then known into a regular system, called his Elements of Geometry, secured to himself a celebrity which, in point of extent, has never been surpassed, and perhaps scarcely ever equalled, his work having ever since been considered as the standard of all geometrical knowledge. Euclid was quickly followed by Archimedes, a mathematical genius, who added many discoveries to the sciences of geometry, mechanics, optics, and hydrodynamics. In geometry he discovered the ratio between the sphere and the circumscribing cylinder, found the quadrature of the parabola, and the solidity of its conoid; he invented the spiral which bears his name, and discovered its rectification, besides a variety of other important geometrical propositions, many of which are extant, and attest the skill and ingenuity of the author.

Apollonius, of Perga, who, from his writings, acquired the name of the Great Geometrician, flourished about thirty years after Archimedes. His work on the Conic Sections, which is the principal piece of his extant, was in all probability the best of its kind in that day, and has since been the groundwork of all works published on that subject. Of those who after Apollonius distinguished themselves in their time in the cultivation of the geometrical science, there are but few who added any thing worthy of particular notice. Eratosthenes attempted to measure the circumference of the earth; Ctesibius invented water pumps; Hero of Alexandria, clepsydræ; Theodosius, who lived in the first century of the Christian era, wrote a treatise on the sphere, which was one of the first on spherical trigonometry.

After an interval of three or four centuries from the time of Theodosius, we meet with the names of Pappus, the commentator of Apollonius, Theon, the commentator of Ptolemy, and of Proclus, another commentator on the ancient mathematicians. The destruction of the library of Alexandria by the Saracens was very fatal to the cultivation of geometry, which had flourished there more than any where else: all the geometricians from every part had assembled there, and when driven away they were deprived both of their books and instruments. It is not surprising, therefore, that the study of geometry was for many centuries almost entirely forgotten amidst the troubles which desolated all Europe on the irruption of the northern tribes. The Arabs, who, by the ravages they committed at Alexandria, had done the most injury to the science of geometry, were, after the lapse of two centuries, the cultivators of that which they had nearly annihilated. They studied the works of the Greeks, and showed their proficiency in the correctness of their comments on these writings.

Whilst the Arabs were thus promoting the cause of science generally, Europe remained in a state of comparative barbarism, nor was the study of geometry revived among the Europeans before the fourteenth and fifteenth centuries, when by the translations of the ancient writings, the taste for geometry became very general among the thinking part of the community. In the following century there arose mathematicians who added very materially to the stock of geometrical knowledge. Carden applied algebra to the resolution of geometrical problems; and Descartes, who followed at the distance of nearly a century, pursued this application of algebra to geometry still farther. At the same period with Descartes flourished Cavelerius, who, in his work on 'Indivisibles,' struck out a new path to himself, in which he was followed by many writers of great celebrity, as Wallis, Pascal, Fermat, Roberval, Liebnitz, Newton, and many others, who set forth geometry in a new light, and formed a new system of the science. Among the treatises in which are embodied the geometrical principles of the moderns and ancients may be reckoned the Elements of Euclid by Simson and Playfair, the treatises of Ozanam, Clavius, Bonnycastle, Hutton, &c.

GEORGE, St. The patron saint of England, is said to have been a great warrior of Cappadocia, and a martyr in the Christian cause.

GEORGICS. Books treating of husbandry, after the manner of Virgil's poems on rural subjects, which are so called.

GERANIUM. A genus of plants, the numerous species of which are remarkable for the beauty either of their leaves or their flowers, or both. The seeds of the flower are contained in a husk, which resembles a stork's beak, whence it has acquired the English name of crane's bill.

GERMAN. A native of Germany, a con-

federated kingdom of Europe, which includes the kingdoms of Bavaria, Hanover, Saxony, and Wirtemberg, together with thirty-four small states and free cities. The inhabitants are distinguished for gravity, industry, and perseverance. Germany is remarkable for its number of literary men.

GERMAN (in Law.) Whole or entire as respects genealogy or descent, as brothers german, those who are so on both father and mother's side.

GERMEN (in Botany.) The germ, ovary, or seed bud, which is the lower part or base of the pistil.

GERMINATION. The act of sprouting forth, as applied to the seeds of vegetables; also, the time when they vegetate.

GIANTS' CAUSEWAY. A vast collection of a black kind of marle, called basaltes, in the county of Antrim in Ireland. The masses of rock are there disposed in such regular order, and to such an extent, as to make this causeway one of the greatest curiosities in nature.

GIBBOUS (in Astronomy.) A term applied to the enlightened part of the moon, during her course from full to new, when the dark part appears falcated or horned, and the light part convex or gibbous.

GIFT (in Law.) A conveyance which passeth either lands or goods; a transfer of any thing without a valuable consideration.

GIG. The name of a light chaise, with two wheels, drawn by one horse, to which whim or fashion have annexed various names, as tilburies, dennets, cabriolets, &c., as they slightly vary.

GILD. See Guild.

GILDING. The art of covering the surface of bodies with gold.

GILLIFLOWER, or July Flower. A smaller kind of carnation that flowers in July.

GIMLET. A carpenter's tool for boring holes.

GIN, or GENEVA. A hot fiery spirit, formerly drawn from the berries of the genevre or juniper tree, but now made by the distillers of the oil of turpentine and malt spirits. The Hollands Geneva is manufactured chiefly at a village near Rotterdam, and is drawn from wheat and the juniper berries.

GIN (among Sportsmen.) A machine which serves as a trap or snare for catching beasts.

GIN (among Mechanics.) A machine for driving piles.

GINGER. A root which grows in the East and West Indies. It has a biting hot taste; the flower consists of five petals, shaped something like those of the iris.

GIPSIES. A wandering tribe, who are to be found in different countries of Europe, and are supposed to be of Egyptian origin. They are altogether a distinct class of people, both in their habits, which are predatory and uncivilized; and in their complexion, which is sallow and brownish. But they are now beginning to follow the occupations of civilized life, and in winter to reside in towns, where they occasionally send their children to school.

GIRDERS (in Architecture.) Some of the largest pieces of timber in a floor.

GIRT. The circumference of a tree.

GLACIERS. A name in Switzerland for the extensive tracts of ice and snow which occur in the Alps.

GLACIS (in Fortification.) A mass of earth serving as a parapet to the covered way.

GLADIATORS. Persons who fought in the arena at Rome for the amusement of the people. These were usually slaves, who fought until one was killed. This cruel custom was abolished by Constantine the Great.

GLANDS. A sort of kernels in the animal body, which serve to secrete the fluids. They are composed of blood vessels, nerves, and absorbents.

GLANDERS. A virulent disease in horses, which shows itself by a discharge of mucus from the nostrils.

GLASS. An artificial substance formed by the action of fire on sand, or siliceous earth with salts and metallic oxides. It is remarkable for its brittleness and transparency, which latter quality renders it available for many purposes of domestic use. There are five kinds of glass, namely, flint glass, or glass of lead; plate glass, or glass of pure soda; crown glass, the best window glass; broad glass, a coarse window glass; and bottle glass, a coarse green glass. The materials of glass when fluid, are so perfectly ductile and plastic, that the glass is blown into shapes by the breath of the workman, through an iron pipe, about three feet long, assisted by a few very trifling tools. He dips the end of his blowing-pipe into the melting-pot, through the hole in the furnace, and the fluid which sticks to the iron is blown with some management, and with the aid of a boy, who, while it is still red hot, joins to the blown vessel any peculiar parts. When finished, it is placed in an upper furnace, and kept in a red heat for some hours. Window glass is first rolled with the pipe, and then unrolled on a flat surface.

GLASS (among Mariners.) Sometimes the telescope, and sometimes the hour glass or sand glass.

GLASS-BLOWER. One who blows glass in a glass-house.

GLASS-HOUSE. A house where glass is manufactured.

GLAUBER'S SALTS. The sulphate of soda; a purgative.

GLAZIER. One who works with glass, or makes glass windows.

GLAZING. The crusting over earthenware with a vitreous substance; also, the putting glass into windows, or making glass lights for windows.

GLEANING. Picking up the scattered ears of corn after the corn is cut and carried. It was once thought that, by the common law, the poor might claim this liberty as their right; but it has been adjudged by a solemn judgment of the English Court of Common Pleas, that no such right exists by the common law of the land.

GLEBE LAND (in Law.) A portion of land belonging to a parsonage or vicarage.

GLEE (in Music.) A composition of three or more parts; originally used for convivial purposes.

GLIRES. The fourth order of the class mammalia in the Linnæan system, including such animals as have two fore teeth, a cutting one in each jaw, no tusks, and feet with claws formed for running, as the beaver, the hare, &c.

GLOBE (in Geometry.) A round spherical body, more commonly called a sphere; as the armillary sphere.

GLOBE (in Astronomy.) An artificial sphere, or a round solid body, on which is drawn a representation of the earth, as on the terrestrial globe; or of the heavens, as on the celestial globe.

GLOBULES. Little globes or round bodies observable in fluids.

GLOSSARY. A vocabulary or small dictionary, attached for the most part to any work, and serving to explain the obscure words used therein.

GLOWWORM. An insect that shines in the dark. The female is larger than the male, and emits a beautiful phosphoric light.

GLUCINE. An earth of a sweetish taste, which has been lately discovered by Vauquelin in analyzing the beryl. It is infusible in the fire and insoluble in water, but combines with acids, making with them soluble salts.

GLUE. An inspissated jelly, made from the parings of hides and other offals by boiling them in water, then straining off the impurities and boiling them again.

GLUME (in Botany.) The calyx or corolla of grasses.

GLUTEN. An adhesive, tenacious, and elastic substance, similar to glue, which is procured by the decomposition of wheat flour, or other vegetable substances, of which it forms a part.

GLUTTON. A cunning voracious animal, larger than a badger, which inhabits Europe, Asia, and America, and preys on the carcases of hares, mice, &c.

GNAT. An active little insect, which lives by sucking the blood of other animals.

GNEISS. A sort of rock that lies immediately over granite.

GNOMON (in Dialling.) The stile or pin of a dial, the shadow of which points out the hours.

GNOMON (in Astronomy.) An instrument or apparatus for measuring altitudes.

GNOMON (in Geometry.) A figure formed by the two complements with either of the parallelograms about the diameter.

GNU. A particular kind of antelope, having horns bent forward at the base, and backward in the middle.

GOAD. A staff pointed with a sharp iron for driving cattle.

GOAT. A quadruped fond of hilly, rocky situations, and feeding on aromatic vegetables. The varieties of the goat are distinguished principally by their horns. In many countries they supply the inhabitants with flesh and milk.

GOAT-SUCKER. An American bird, so called because it was supposed to suck the teats of the goats.

GOD. The name in the English language of the First Cause, or Creator, Continuator, and Preserver, of all things, to whom belong the attributes of omnipotence, omniscience, and eternal duration.

GODFATHER. One who stands sponsor for a child in baptism.

GOLD. The richest and heaviest metal except platina, being the most solid and the least porous. The ductility and malleability of gold, is such, that one grain of it will cover upwards of fifty square inches, and an ounce is capable of being extended in the form of wire many hundred miles. Gold is found in beds of quartz, sandstone, &c. and also in many rivers, particularly in Peru, in minute and irregular grains, which are known by the name of gold dust.

GOLDBEATERS' SKIN. The skin or membrane of any animal, particularly the gut of an ox, which is used by the goldbeaters in preparing gold leaf. It is an excellent material to keep the air from wounds and sores.

GOLDEN NUMBER A number beginning with one and increasing one every year till it comes to nineteen, when it begins with one again, and is used to show what year in the lunar cycle any given year is.

GOLDEN ROD. A plant which is for the most part a native of North America. Two species only are found in Europe.

GOLDEN RULE. A name given to the Rule of Three. Also, to do unto others as you would have them do unto you.

GOLDFINCH. A beautiful bird with a fine yellow mark in its black quill feathers. It sings very charmingly, and is very docile.

GOLD FISH. An elegant fish of a gold colour, originally brought from China, and now kept by way of ornament, in glass globes.

GOLD LEAF, or LEAF GOLD. Gold that is hammered by the beaters until it becomes as thin and extended as a leaf.

GOLDSMITH. A worker or seller of gold or silver vessels.

GONDOLA. A pleasure barge, curiously ornamented, and navigated on the canals of Venice. The middle sized gondolas are upwards of thirty feet long and four feet broad, they always terminate at each end in a very sharp point, which is raised perpendicularly, to the full height of a man.

GONG (in Music.) A Chinese instrument, the form of which is a shallow circular concave.

GOODS (in Law.) The valuables of which a man is possessed.

GOOSANDER. A water bird, the size of a goose.

GOOSE. Wild geese are seen migrating north and south, over the United States, in the seasons of spring and fall, at a great height, in flocks of from 50 to 100. The tame geese, which are so abundant in our farm yards, are a source of profit, and every author must acknowledge the value of their quills. The gray lay goose, or common wild goose, is easily tamed: from this sort has sprung the domestic breed.

GOOSEBERRY (in Botany.) A plant that is set with prickles, and yields a fruit of an oval and globular figure, containing many small seeds in a pulpy substance. It is a bush much cultivated in gardens.

GORGE (in Fortification.) The entrance of a bastion, ravelin, or other outwork.

GORGET. A piece of armour round the neck; something similar is now worn by officers on duty by way of ornament.

GOSHAWK. That species of hawk which was formerly much used in falconry.

GOSPEL. The four books in the New Testament written by the Evangelists, St. Matthew, St. Mark, St. Luke, and St. John.

GOSSAMER. A fine filmy substance, like a cobweb, which is seen in clear days in autumn in stubble fields, and is probably worked by spiders for catching flies.

GOTHIC ARCH. An arch called by the Italians arche de terzo et di quarto acuto, i. e. of the third and fourth point, consisting of two arcs of a circle meeting in an angle at the top.

GOTHIC STYLE. A style of architecture in which pointed arches of greater height than breadth, and a profusion of ornaments, in imitation of leaves and flowers, are the principal characteristics.

GOVERNMENT. The power in a state by which the whole is governed; if this power be in the hands of one, it is a Monarchy; if in the hands of the nobility, an Aristocracy; and if in the hands of the people, or those chosen by them, a Democracy. The Executive Government is the power of administering public affairs, the Legislative Government that of making the laws. In England, the Executive Government is in the king and his ministers; but the Legislative Government is in the Parliament, that is, the King, Lords, and Commons; whence the constitution of England, is denominated a Mixed Government. In the United States the government is vested in a President and Congress.

GOUGE. An instrument for boring holes.

GOURD. A plant nearly allied to the cucumber, and still nearer to the melon. The fruit of some species are long, and others round or bottle-shaped.

GOURDWORM. A worm which infests the intestines of animals.

GOUT. A painful periodical disease, which may affect any membraneous part, but commonly those at the greatest distance from the heart and the brain, as the feet or hands.

GOUTWEED. A perennial, so called from its supposed efficacy in curing the gout.

GRACE, Days of (in Commercial Law.) Three days allowed for the payment of a bill after it has become due.

GRACE (in Heraldry.) The style used in speaking of or to a duke or duchess, as your Grace, his or her Grace.

GRADATION (in Chymistry.) A process by which metals are gradually raised to a still higher degree of purity.

GRADUATE. One who has taken a degree in a university.

GRADUATION. Dividing any thing into equal parts or degrees.

GRAFTING (in Horticulture.) The process of inserting a branch of one tree into the stock of another, so that it may receive nourishment from it, while at the same time it produces a new tree, like the old one whence the graft was taken. The engraving represents the parts thus prepared, and after the graft has been inserted, and the barks closely united, they are tied together, and covered with a lump of clay till they unite.

GRAFTING-TOOL. A kind of curved spade fit for cutting trenches.

GRAIN. A general name for all kinds of seed corn.

GRAIN (in Commerce.) A small weight, the twentieth part of a scruple in Apothecaries weight, and twenty-fourth in Troy weight.

GRAIN (in Mineralogy.) The veins of wood or the component particles of stone and metals as they are disposed in the mass, &c.

GRAINS OF PARADISE. The seeds of the ammonium, which have a pungent taste like pepper.

GRAIN TREE. The cochineal tree.

GRAKLE. A bird not inhabiting Europe, having a thick bill and sharp hooked claws.

GRALLÆ. An order of birds in the Linnæan system, with obtuse bills and long legs, as the crane, snipe, stork, and ostrich.

GRAMINA. Grasses; the fifth family in the Linnæan system, comprehending among the species the ray grass, clover, trefoil, sanfoin, lucern, &c. which are called artificial grasses, as distinguished from the meadow grass.

GRAMMAR. The art of speaking and writing truly, according to the rules established by custom and the authority of good writers. Universal Grammar is that which treats of the first principles or elements of language, which are founded on logic; Particular Grammar is the grammar of each language, containing not only the general principles of grammar, but also the peculiarities in the structure of each language.

Grammar is divided into four parts, namely, 1. Orthography, or the right mode of writing and spelling, which treats of letters, their powers, different offices, and divisions into vowels, consonants, diphthongs, mutes, liquids, syllables, words, &c. together with punctuation, or the right mode of distinguishing words, &c. by points or accents, &c. 2. Etymology, which treats of the formation or derivation of words from one another, and their distribution into the several parts of speech, according to their several offices, into nouns, adjectives, pronouns, verbs, adverbs, prepositions, conjunctions, and interjections. Etymology also treats of the several inflections to express number, gender, case, mood, tense, person, &c. Sometimes etymology treats of the derivation of words of one language from those of another, which is called remote etymology. 3. Syntax treats of words as they are connected with or dependent on each other, giving rules for the right construction and disposition of words in a sentence. 4. Prosody treats of the quantities and accents of syllables as parts of a verse, and the right rules of versification.

GRAMMAR, HISTORY OF. Grammar, as a practical art, must have existed long before it was considered as a science, and the rules of grammar must have been formed after language had assumed a settled shape by the practice of good writers. The works of Homer contained a practical illustration of all the rules of the Greek grammar long before the subject of grammar excited any attention. It is likewise clear that as there is a close connexion between correctness of thinking and correctness of speaking, the study of logic preceded that of grammar; hence we find that Aristotle makes a logical distinction between words denoting time and words not denoting time, the former of which he denominates by a word answering to the verb in grammar, and the latter by a word answering to the noun. But although the Greeks, particularly the Athenians, cultivated their language for purposes of oratory, yet there appears to have been no particular advances made towards bringing it under grammatical rules. They seem to have studied their language by the ear, which was so universally nice that an herb woman at Athens is said to have distinguished Theophrastus to be a stranger from the affectation of a single word in expressing himself; and for the same reason the orators were careful not to let a single injudicious expression escape them which might offend the audience. We are likewise informed that it was a common thing for the young people to get the tragedies of their favourite authors by heart, which they would recite on various occasions. When the Athenians, after their defeat at Syracuse, were made slaves, they softened their slavery by reciting the works of Euripedes to their masters, who treated them the better on that account. In this manner the Grecian youth were taught their language at school, where a Homer was looked upon as indispensable. To a light minded people, like the Athenians, this mode of learning a language would be far more agreeable than the dry method of studying grammar; but as this former course was not so practicable in the acquiring a foreign language, this is probably the reason why grammar seems first to have been cultivated among the Romans, who, being studious of the Greek, were naturally led to a comparison of languages, and to a logical and abstract consideration of language in general. Certain it is, that the study of grammar commenced with the Romans, and that the names of all the parts of speech are Latin, and to be found in the writings of authors subsequent to the age of Varro and Cicero, as Ælius Dionysius, Julius Pollux, Valerius Probus, Herodian, Suetonius, Charisius, Macrobius, Diomedes, Augustin, Priscian, Ælius Donatus, &c.

GRAMMARIAN. One who is skilled in grammar learning.

GRAMMAR SCHOOL. A school in which the learned languages are grammatically taught.

GRAMME. A small French weight.

GRANARY. A storehouse for thrashed corn.

GRAND JURY (in Law.) The jury which find bills of indictment against offenders, who are afterwards tried before a petty

ury, in case the former find a true bill against the party accused.

GRAND SEIGNIOR. The title of the sultan or emperor of the Turks, who, in going daily to mosque, rides in state, as represented in the engraving.

GRANITE. A compound rock, consisting of quartz, felspar, and mica, crystallized and cohering without cement. Granite is hard, and admits of an elegant polish.

GRANT (in Law.) A gift in writing of such things as cannot conveniently be passed or conveyed by word of mouth.

GRANULATION (in Chymistry.) Pouring melted metals into cold water, that they may divide themselves into grains.

GRAPE. The fruit of the vine, growing in clusters, from which wine is expressed. Grapes are found by a chymical analysis to contain supertartrate of potash, tartaric acid, citric and malic acids, abundance of sugar, a portion of mucilage jelly, some albumen, and also, as is said, some gluten.

GRAPESHOT (in Artillery.) A combination of small shot put into a thick canvass bag, and corded so as to form a kind of cylinder.

GRASSHOPPER. An insect that hops in the summer grass: it is allied to the locust in its make, but is very harmless.

GRAVEL. A kind of loamy sand mixed with pebbles, which adhere so as to form a solid handsome path.

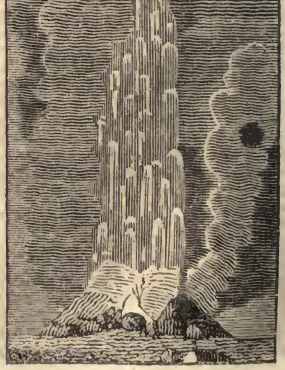
GRAVER. A tool used in engraving.

GRAVIMETER. An instrument for measuring the specific gravities of bodies.

GRAVITATION. The pressure that a body, by the force of its gravity, exerts on another body under it.

GRAVITY (in Physics.) The natural tendency or inclination of bodies towards a centre. Terrestrial gravity, is that force by which all bodies are continually urged towards the centre of the earth. It is in consequence of this force that bodies are accelerated in this fall, and when at rest that they press the body, or that part of the body by which they are supported. As to the cause of gravity, or its nature, nothing whatever is known, and it would be useless and unprofitable to occupy any part of this article in detailing the several vague hypotheses that have been advanced to account for this most important law of nature. All that can be said is, that it appears to be an essential property of matter, or, at least, of all matter that has hitherto become the object of human investigation, though it is by no means certain that matter may not exist which is not subject to its influence. Specific gravity, is the relative gravity of any body or substance, considered with regard to some other body which is assumed as a standard of comparison, and this standard by universal consent and practice, is rain water, on account of its being less subject to variation in different circumstances of time, place, &c. than any other body, whether solid or fluid. And, by a very fortunate coincidence, at least to English philosophers, it happens that a cubic foot of rain water weighs 1000 ounces avoirdupois; and consequently, assuming this as the specific gravity of rain water, and comparing all other bodies with this, the same numbers that express the specific gravity of bodies, will at the same time denote the weight of a cubic foot of each in avoirdupois ounces, which is a great convenience in numerical computations.

GREAT GEYSER. A fountain of hot water in Iceland, supposed to arise from a



stream of water passing over a large bed of pyrites, and thereby heated, expanded in steam, and pressed upward.

GRECIAN. A native of Ancient Greece, (lately the southern part of Turkey.) Greece was the first civilized country of Europe. It was distinguished for its orators, heroes, philosophers, statesmen, painters, &c. who surpassed all others; and to them mankind are indebted for the first rudiments in many of the arts of civilized life. The country abounds in beautiful scenery, remains of elegant buildings, and specimens of sculpture. The climate is mild and healthy. The Greeks of the present day are ingenuous, brave, and courteous, and profess the Christian religion. For centuries they have been held in the most abject state of slavery; but in 1820 they threw off the Turkish yoke, and by the aid of France and Russia, have succeeded in obtaining a nominal independence, after much bloodshed, privation, and unparalleled suffering.

GREEK ALPHABET. It is used in English books to distinguish the stars in the constellations, the first eight of which it may be useful to know; as

α, Alpha,	ε, Epsilon,
β, Beta,	ζ, Zeta,
γ, Gamma,	η, Eta,
δ, Delta,	ϑ, or θ, Theta.

GREEK FIRE. An artificial fire invented by the Greeks in the middle ages, during their wars with the Arabs and Turks. It consists of naphtha, bitumen, sulphur, gum, &c.

GREEN. One of the seven original colours excited by the rays of light, which is the most grateful to the eye and most favourable to the sight.

GREENFINCH. A yellowish green bird, an inhabitant of Europe, which lays green eggs.

GREENHOUSE. A place of shelter for exotics and tender plants.

GREENLANDER. A native of Greenland, a cold, desolate region, belonging to the Danes, formerly supposed to be a part of North America, but now believed to be an extensive island. The coast is usually lined with islands of ice. It is inhabited by Esquimaux Indians and Norwegians, who are generally diminutive in size, lazy, and superstitious. The white bear is the principal animal, and is extremely ferocious, attacking, indiscriminately, man and beast.

GREENSHANK. A sort of snipe.

GREGORIAN STYLE, or the NEW STYLE (in Chronology.) A new account of time, according to the Calendar made by order of Pope Gregory XIII.

GRENADE. A hollow globe of iron, filled with combustibles, and thrown out of a mortar.

GRENADIERS. Foot soldiers selected for their stature, being the tallest and stoutest men in the army.

GREYHOUND. An elegant English dog, remarkable for its fleetness; and there is an Italian breed, smaller and more delicate.

GREYWACKE. A mountain formation, consisting mostly of a sort of slate.

GRIST. Corn sent to mill to be ground.

GRIT. The smallest particles of sand; also, the coarser parts of meal.

GROAT. A silver coin, first struck in the reign of Edward I. It has since been used as a money of account equal to eight cents.

GROCER. One who sells tea, sugar, plums, spices, &c.

GROOM. A servant who looks after horses.

GROOM OF THE STOLE. An officer of the English court, who has the charge of the king's wardrobe.

GROOVE. A hollow channel cut with a tool.

GROSS-BEAK. A bird with a stout bill, and of a fiery red colour, except round the bill and on the throat, which is black. It is to

be met with in North America, and is called the Virginia Nightingale, on account of the fineness of its song.

GROSS-WEIGHT. The weight of goods, together with the cask or vessel.

GROT, or GROTTO. A hollow under ground; also, an artificial hollow made in a garden.

GROTESQUE (in Painting and Sculpture.) A work or composition in the grotesque or wild state.

GROVE. A small wood or place set with trees.

GROUND (in Husbandry.) Any piece of land in cultivation, or set apart for cultivation.

GROUND (in Architecture.) The ground plot, or piece of ground selected for a building.

GROUND (in Military Tactics.) The field or place of action.

GROUND (in Painting.) The surface on which the figures and objects are raised and represented.

GROUND (in Music.) The plain song or tune in which the descents are raised.

GROUND (among Mariners.) The place where the anchor is fixed.

GROUND-IVY. An herb, the shoots of which trail upon the ground, and take root at their different joints.

GROUNDLING. A fish, so called because it keeps under stones in small brooks.

GROUND-PINE. A plant, the smell of which resembles resin. It grows on dry and barren hills, and on the ditchbanks by the roadside.

GROUNDSILL. The lowest horizontal timber on which the exterior wall is erected.

GROUP (in Painting.) An assemblage of figures, appearing to have a connexion with each other.

GROUPING (among Painters.) Putting figures together in groups.

GROUSE. A bird larger than a partridge, but otherwise very similar in appearance; of which, however, there are several varieties. It inhabits the mountains and woody parts of Europe and Asia, and some parts of the United States; is solitary in its habits, except in breeding time, when it is very inattentive to its safety, and is easily caught. The wood grouse is here represented.

GRUB. The worm or maggot produced from the beetle, which afterwards becomes a winged insect.

GRUINALES. One of Linnæus' natural orders of plants, containing the geraniums, flax, lignum vitæ, &c.

GRUS. One of the new constellations.

GUIACUM. A resinous substance procured from a tree in the West Indies, called lignum vitæ.

GUARANTY (in Diplomacy.) A prince or power appointed by the stipulating powers, to see that the articles of any treaty or agreement are performed on each side.

GUARD. The duty of guarding or defending any post or person from an attack or surprise; also, the soldiers who do this duty.

GUARD (in Fencing.) A posture or action proper to defend the body.

GUARDBOAT (in Naval Tactics.) A boat appointed to row among ships of war, to see that the officers keep a good look out.

GUARDIAN. One who has the charge of a person committed to him; as the guardian of an infant, who sees to his education and manages his affairs, &c.

GUARDSHIP. A vessel appointed to superintend the marine affairs in a harbour or river.

GUEBRES. A Persian sect, who still worship fire as an emanation or emblem of the Deity.

GUDGEON. A fresh water fish, of the carp kind, the flesh of which is very delicate.

GUIDE (among Travellers.) One who accompanies another in order to show him the way.

GUIDE (in Music.) The leading note in a figure.

GUILD (in Law.) In England, a company or incorporated society.

GUILDHALL. The common hall of the guilds or companies, which was built in London in 1411.

GUILLOTINE. A machine for beheading, which is used in France, and was introduced during the revolution.

GUINEA. An English gold coin, first coined in the reign of Charles II. and till late-

ly current for 21*s.* sterling. It was so called because it was made from the gold that was brought from Guinea, on the coast of Africa.

GUINEA HEN. A native of Africa, but common in the United States; it is larger than the common domestic hen, and has a kind of coloured fleshy horn on each side of the head. Its colour is a dark gray, beautifully variegated with small white spots. Its voice is harsh and unpleasant.

GUINEA PIG. An animal betwixt a rabbit and a mouse, an inhabitant of Brazil. It is perpetually restless when awake.

GUITAR. A musical stringed instrument, rather larger than a violin, and played with the fingers.

GULES. A tincture in heraldry, marked in engraving by straight lines.

GULF. A part of the sea running in land, as the Gulf of the Adriatic.

GULL. A sea bird, of which there are many varieties.

GUM. A concreted vegetable juice, which exudes through the bark of trees. A gum, properly speaking, is that only among chymists which is soluble in water; that which is insoluble in water is a gum resin. The gum arabic flows from the acacia, in Egypt; gum lac is the juice of the croton lacifera; gum ammoniac was first drawn from ammonia.

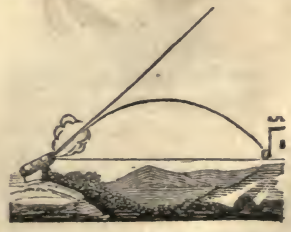
GUMS. The vascular and elastic substance that covers the arches of the upper and under jaws, embracing the roots of the teeth.

GUN. Any sort of offensive weapon from which shot, bullets, &c. are discharged.

GUNBOAT. A boat with a flat bottom, serving as a floating battery.

GUNNER. One who manages the artillery.

GUNNERY. A science which directs the



elevation in which a piece of cannon should be placed, so that the shot or ball shall strike a certain object. The gun is elevated to a certain fixed angle, given in tables accurately calculated, and then the ball passes through a curve, and reaches the proposed spot.

GUNPOWDER. A composition of sulphur, nitre, and charcoal, invented early in the fourteenth century, by Schwartz, a chymical monk, if not earlier. The proportions of the dry materials are 75 parts of nitre, 16 of charcoal, and 9 of sulphur, which are combined with water, vinegar, urine, or spirit of wine; and the velocity of a musket ball is, on an average, 1600 feet per second, and its range half a mile. The greatest velocity with which a cannon ball is projected, is 2000 feet per second. The range of the Congreve rockets is nearly two miles, and large mortars have thrown bomb-shells three miles.

GUNPOWDER PLOT. The plot or conspiracy in which Guy Fawkes was the principal agent, to blow up the parliament house in England, by means of gunpowder placed underneath, which was to have been set fire to when King James I. was assembled with his parliament; also, the anniversary of that day, namely, the fifth of November, when this plot was discovered.

GUNSHOT. The reach or range of a gun.

GUNSTOCK. The wood to which the barrel of a gun is fixed.

GUNTER'S CHAIN. The chain commonly used in measuring or surveying land, so called from Mr. Gunter, the inventor. The chain is 66 feet in length, and is divided into 100 links of 7.92 inches each, consequently an acre of land is equal to 10 square chains.

GUNTER'S LINE. A logarithmic line, usually graduated upon scales, sectors, &c.

GUNWALE, or GUNNEL. The uppermost wale of a ship.

GURNARD. A fish, of which there are several species. The head is loricated with bony plates, and there are seven rays in the membrane of the gills.

GUST (among Mariners.) A sudden and violent squall of wind.

GUTTA SERENA. A disease in the eye, which deprives the patient of his sight.

GUTTURAL LETTERS. Letters which are pronounced with the throat.

GYMNASIUM. A place among the ancients, where the youth were trained in gymnastic exercises; also, a public school of learning, in which latter sense it is now frequently employed.

GYMNASTICS. Athletic exercises, such as wrestling, leaping, running, and throwing the dart or quoit, which was much in use among the Greeks, from whom the word is derived.

GYMNOSOPHISTS. A sect of Indian philosophers, who always went naked, and lived a solitary life.

GYMNOTUS. An eel, remarkable for its power of affecting the nervous system, in the manner of electricity. This animal and the torpedo, on dissection, appear to have an arrangement of muscular plates, not unlike a galvanic trough, and well adapted to produce the effect.

GYNANDRIA. One of the classes in the Linnæan system, consisting of plants with hermaphrodite flowers, in which the stamina are placed on the style.

GYPSUM. A sort of calcareous earth, composed of 42 parts of lime, and 58 of sulphuric acid. When highly burnt it falls into powder, from which plaster of paris is made. It is used in the arts and agriculture.

H.

H, the eighth letter of the alphabet, formerly stood as a numeral for 200, with a dash over it for 20,000; in Heraldry, it stands for the middle base, a point in the escutcheon; as an abbreviation, for hour.

HABEAS CORPUS. A writ which may be made use of by courts for removing prisoners to answer any cause, as a Habeas Corpus ad respondendum, ad satisfaciendum, &c.; but the most celebrated writ of this kind is that of Habeas Corpus ad subjiciendum, which a man who is, or supposes himself to be, aggrieved by an unlawful imprisonment, may have out of the Supreme Court, directed to the person detaining him, and commanding him to produce the body of the prisoner, to submit to or receive whatever the court shall consider in that behalf. This writ was founded on the common law, and secured by many statutes, particularly that of the 31 Chas. II. which is by distinction called the Habeas Corpus Act.

HABERDASHER. A dealer in small wares, as tape, thread, pins, needles, &c.

HADDOCK. A fish of the cod kind, which inhabits the northern coast.

HADLEY'S QUADRANT. A quadrant, or, more properly, octant, or sextant, for taking angles between distant objects, made on the principle, that, in reflection, the angle of incidence is equal to the angle of reflection. It is provided with a moveable, or index radius, at the arc end of which is a vernier for subdividing into tenths the divisions on the arc; and also with a plain object mirror, moveable with the index. Other mirrors for fore and back observation are then fixed on the left hand limb, and sights on the right limb, to determine at what angle the moveable and fixed mirrors become parallel.

HÆMORRHAGE. A flux of blood from any part of the body.

HAIL (in Meteorology.) An aqueous concretion of irregular form, descending from the atmosphere like frozen rain, a scourge that devastates and even annihilates in an hour the richest crops. Hail-stones are seldom spherical, as their size adds to their irregularity, and their cavities and angles indicate successive amalgamations. When falling in summer, it is caused by a confluence of winds which drive the dense vapours into the higher regions of the air, above the line of perpetual congelation; there the hail-stones are formed, and descend by their gravity, but often obliquely, through the strength of the wind.

HAILING (among Mariners.) Saluting or accosting a ship at a distance.

HAIR. Small filaments issuing from the skins of animals, depending on the skin and not on the nutriment for support. The microscope shows them to be triangular and square, depending on the form of the pores whence they issue; and the ends, when long, split into two or three branches. A mass of hair analyzed was found to contain a thirteenth of carbonate of ammonia, a seventh of water, a fourth of oil, a fourth of gases, and one third of coaly matter. Red hair differs from black, in containing red oil, instead of blackish green oil; and in white hair the oil is colourless, and it also contains some phosphate of magnesia.

HAIR (in Botany.) The down, or hairlike threads on the surface of plants.

HAIR-GRASS. A plant, some species of which are perennials and some annuals.

HAIR'S-BREADTH. A measure of length, equal to the forty-eighth part of an inch.

HALBERT. A weapon something like a spear, formerly carried by the serjeants of foot and artillery.

HALCYON. A name for the kingfisher.

HALF-BLOOD (in Law.) Relationship by the father's or the mother's side only.

HALF-MOON (in Fortification.) An outwork having two faces.

HALL. A public edifice, a court of justice.

HALL (in Architecture.) A large room at the entrance of a fine house.

HALLIARDS. Ropes for hoisting up the yards.

HALLOO. A hunter's cry after the dogs.

HALLUCINATION. An affection either in the senses or the imagination, which causes a person to feel, see, or hear wrong.

HALO. A meteor, in the form of a luminous ring or circle, appearing round the bodies of the sun, moon, or stars.

HAMMOCK (among Mariners.) A swinging bed used on board of ships.

HAMSTER. An animal of the mouse tribe, entirely black, except at the tip of the nose, edges of the ears, feet, and sometimes the tail, which are white.

HAND. The numerous bones of the hand prove the wonderful structure of the animal frame. It is joined to the radius and ulnus of the arm by the carpus, or wrist, which consists of eight small bones, in two rows; to these are attached four bones within the palm, called metacarpus, and each of the fingers

and the thumb contains three bones, connected by cartilages: hence the hand contains twenty-seven bones. It is so important an instrument to man, that without it his reason and speech would not have availed him against other animals.

HAND (among Watchmakers.) The index of a clock or watch.

HAND (in the Manege.) The fist clenched or a measure of three inches, by which the height of a horse is computed; also, the parts of a horse, as the forehand, for the head, neck, and fore quarters; the hindhand, which includes the rest; and also the horseman's hand, as the spur hand, which is his right hand; and the bridle hand, which is his left hand.

HAND-BARROW. A barrow without wheels.

HANDCUFFS. Two circular pieces of iron locked over the wrists of a prisoner to prevent him using his hands.

HANDSPIKES. Wooden levers used at sea.

HANSE TOWNS. Port towns of Germany which were incorporated for the purpose of protecting their trade. The three principal of these towns were Hamburgh, Bremen, and Lubec, which still retain the name.

HARBOUR. A place where ships may ride in safety.

HARDNESS (in Physiology). The resistance opposed by a body to the separation of its parts.

HARE. A timid animal of exquisite sight and hearing, about two feet long, which subsists on vegetables, produces about nine young

ones every year, and lives about seven years. It is the prey of dogs, foxes, wild cats, wolves, and men, and is often seized by eagles and hawks. Its fears prevent its leaving its retreat during the day, and when taken, its cries resemble those of a child, which leads Thomson to remark, "Poor is the triumph o'er the timid hare."

HARMATTUN. A wind which blows periodically from the interior parts of Africa towards the Atlantic. This wind is remarkable for its dry and parching character.

HARMONICA. A musical instrument constructed with pieces of glass.

HARMONICS. That branch of music which considers the differences and proportions of sounds.

HARMONY (in Music.) The agreeable result or union of several musical sounds heard at one and the same time. Melody is produced by a succession of musical sounds, as harmony is produced by their combination.

HARMONY OF THE SPHERES. A kind of music, supposed by the ancients to be produced by the accordant motions of the stars and planets.

HARP. A musical stringed instrument of great antiquity, of a triangular form, the cords of which are distended in parallel directions from the upper parts to one of its sides. Its scale extends through the common compass, and the strings are tuned by semitonic interval. It stands erect, and when used, is placed at the feet of the performer, who produces its tones by the action of the thumb and fingers of both hands on the string.

HARPINS (among Mariners.) The breadth of a ship at the bow.

HARPOONS, or HARPING IRONS. Irons formed at one end like a barbed arrow, and having a rope at the other, for the purpose of spearing the whale.

HARPSICHORD. A stringed and keyed instrument in a mahogany case.

HARPY. A fabulous monster, with the head of a woman, the wings of a bird, and the tail of a beast.

HARRIER. A hunting dog who pursues hares.

HARROW. A drag with iron teeth, to break the clods and prepare ploughed land

for the seed, and also to mix the seed with the soil after it has been sown.

HART. A stag or male deer.

HARSTHORN. A volatile alkali, originally drawn from the horn of the stag; it is now known by chymists under the name of the subcarbonate of ammonia.

HARVEST MOON. The moon which, in the season of harvest, rises several nights successively soon after sunset, owing to the oblique ascension of the signs of the Zodiac, through which the moon is then passing, which signs, in turning the globe, ascend almost horizontally.

HATCHING. The act of maturing fecundated eggs, so that they should produce young birds. This is commonly done by the incubation of the mother; but sometimes by means of artificial heat.

The art of hatching chickens by means of ovens, has been long practised in Egypt, where it is confined to the knowledge of the inhabitants of a single village and its vicinity. This method being easily understood, we shall only observe, that each brood is supposed to consist of 30,000 chickens: the number of ovens amounts to 386, which are in constant employ for six months; and, as the eggs are completely hatched in three weeks, or about the same period as a hen continues to sit upon a brood, it has been calculated that the ovens of Egypt every year communicate life to at least 92,640,000 chickens!

HATCHMENT. See ACHIEVEMENT.

HATCHWAY (among Mariners.) An opening in the deck, to serve as a passage from one deck to another.

HAVERSACK. A kind of bag of strong coarse linen, to carry bread and provisions on a march.

HAUL, or YAUL (among Ropemakers.) A yarn of four hundred threads.

HAUNCH. The hind part of a stag, or of a horse, &c.

HAUTBOY. A musical wind instrument, shaped much like the flute, only that it spreads and widens at the bottom, and is sounded through a reed at one end.

HAWFINCH. A sort of finch, so called because it feeds on haws and cherries.

HAWK. A bird of prey of the eagle and falcon tribe, the two principal species of which are the sparrowhawk and the goshawk, both used formerly in falconry.

HAWKERS. Intinerant petty chapmen, who go with their goods from town to town and from house to house. They are obliged by law to have a license.

HAWKING. The ancient sport of fowling with hawks.

HAWKING (in Trade.) The going about with commodities to sell, after the manner of a hawker.

HAWKWEED. A plant which bears a flower in the form of a marigold. The whole plant has a milky juice.

HAWSE. A sea term, for the situation of the cables before the ship's stern, when she is moored with two anchors out from the bows, as 'a clear or open hawse,' 'a foul hawse,' &c.

HAWSER. A small cable.

HAY-MAKER. A person who turns mowed grass till it dries into hay, for keeping as winter food for cattle.

HAZARD. A game of chance, played much by gamesters and gamblers.

HAZLE NUT. A shrub having male flowers growing at remote distances from the fruit on the same tree. The nuts grow in clusters, and are of three kinds, the common hazle nut,

the cob nut, and the filbert, which latter are the most esteemed.

HEAD (in Anatomy.) The superior part of the body, placed on the neck, and consisting externally of the face and the hairy scalp; internally, of the brain and the medulla oblongata.

HEAD (among Mechanics.) The upper and more solid part of inanimate bodies, as the head of a nail, the head of a gate, the head of a hammer.

HEAD (in Painting.) The representation of the head of a person.

HEAD (in Architecture.) An ornament of sculpture or carved work.

HEAD (in Gunnery.) The fore part of the cheeks of a gun.

HEAD (in Printing.) The top of a page.

HEADER (in Masonry.) A name for the bricks which are inserted lengthwise in the thickness of a wall.

HEADLAND. A point of land lying farther out at sea than the rest.

HEADSTALL. That part of a bridle that goes about the head; also, a kind of halter.

HEALING (in Surgery.) The curing a wound.

HEALING (among Bricklayers.) The covering a roof with any thing, as lead, slates, &c.

HEARING. One of the five senses, of which the ear is the organ, with the help of the auditory nerves and membrane.

HEARSE. A close carriage for conveying dead bodies.

HEART. The main spring or centre of circulation in the animal body. It is divided in the middle by a strong partition; on each side are two cavities, called ventricles; one the right, or pulmonic, and the other, the left, or systemic. Attached to each is a cavity, called the auricle, and from each proceeds a large tube, called an artery, one called the pulmonic artery, and the other the aorta; the first conveys blood to the lungs, and the other expels it through the system.

HEARTBURN. A burning pain in the stomach.

HEARTSEASE. A plant cultivated in gardens, that yields a variegated, sweet-smelling flower.

HEARTH. The pavement of a fireplace.

HEAT (in Physiology.) See CALORIC.

HEAT (among Geographers.) The heat of different climates, which arises from the different angles under which the sun's rays strike upon the surface of the earth; added to which, the heat of different places is either increased or diminished by the accidents of situation, with regard to mountains and valleys, proximity to the sea, and the like.

HEAT (among Smiths.) The degree of heat requisite for iron work, namely, the blood-red heat, the smallest degree; the flame, or white heat, the second degree; and the sparkling, or welding heat, which is the strongest degree.

HEAT (among Sportsmen.) A certain prescribed distance which a horse runs on the course.

HEATH. A wide open place, generally overgrown with heath.

HEATH (in Botany.) A shrub, which either grows wild or is cultivated with great care in hothouses. The cultivated sorts are remarkable for their variety and beauty.

HEAVEN (in Astronomy.) That immense region wherein the planets, stars, and comets, are disposed, and perform their motions; among the ancients, a heaven denoted an orb or circular region of the ethereal heaven. Astronomers therefore assumed as many different heavens as they observed different celestial motions; thus they had seven heavens for the seven planets, the Moon, Mercury, Venus, the Sun, Mars, Jupiter, and Saturn. The eighth was the fixed stars, which was particularly denominated the firmament. Ptolemy added a ninth heaven, which he calls the Primum Mobile; Alphonsus afterwards added two crystalline heavens, to account for some irregularities in the motions of the other heavens. Other ancient astronomers admitted more heavens, according to their different hypotheses.

HEB. An abbreviation for Hebrews.

HECATOMB. The sacrifice of a hundred oxen.

HECTIC FEVER. An habitual fever, or one which is slow and continued, ending in a consumption.

HEDGE. A fence of thorns or shrubs to part off land.

HEDGEHOG. A quadruped defended all over with sharp prickles, which is a native of Europe, and found also in Madagascar. It lives in thickets, and swims easily. When frightened, it rolls itself up in its spiry skin, and presents nothing but a ball of prickles.

HEDGESPARROW. A kind of sparrow that lives in the fields and about the hedges.

HEEL. The back of the foot protuberating behind.

HEEL (among Mariners.) The heel of a mast, that part at the foot of a ship's mast that is pared away slanting.

HEGIRA (in Chronology.) An era which takes its date from Mahomet's flight from Mecca, A. D. 622.

HEIR (in Law.) One who succeeds by descent to lands and tenements.

HEIRLOOM. Household goods and furniture which have for several descents belonged to a house, and necessarily come to the heir with the house.

HELIACAL (in Astronomy.) A term applied to the stars or planets when they rise and set with or at the same time as the sun.

HELIOCENTRIC. An epithet for what relates to the centre of the sun.

HELIOMETER. An instrument for measuring the diameter of the heavenly bodies. This instrument is a kind of telescope, consisting of two object glasses of equal focal distance, placed one by the side of the other, so that the same eyeglass serves for both.

HELIOTROPE, or TURNSOLE. A plant which is said always to follow the course of the sun.

HELLEBORE. A plant, the flower of which expands in the form of a rose. The seed is oblong, like a grain of wheat. It is very doubtful whether the plant now so named, be the true hellebore so famous for its poisonous quality among the ancients.

HELM (in Naval Architecture.) A long flat piece of timber suspended at the hind part of a ship's sternpost, which serves to direct the course of the ship. It is composed of three parts, namely, the rudder, which turns upon its hinges: the tiller, which serves to direct the rudder; and the wheel, round which the tiller rope is wound in large vessels.

HELMET. A headpiece, or armour for the head, which was formerly the noblest piece of coat armour.

HELMINTHOLOGY. The science of worms.

HELVE. The handle of an axe.

HEM. The edge part of cloth.

HEMIPTERA. The second order of insects in the Linnæan system, including those which have their upper wings semicrustaceous, as the cock-roach, mantis or walking leaf, locust, cricket, grasshopper, lantern-fly, boat-fly, water scorpion, aphis or plant louse, and the coccus or cochineal.

HEMISPHERE. Half a globe, distinguished on the earth into northern and southern; and also into eastern and western, or enlightened and unenlightened, with reference to the sun, which always enlightens an equal half, or 90° every way. Europe, Asia, and Africa, constitute the eastern, and North and South America the western hemisphere.

HEMLOCK. A narcotic plant, the leaves of which are cut into many minute segments, like parsley. It is doubtful whether this be the true hemlock of the ancients.

HEMP. A fibrous plant, of which linen and ropes are made.

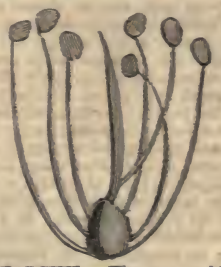
HEN. A female bird of any species, particularly the domestic fowl.

HENBANE. A poisonous plant that grows in hedges, bearing yellow and purple flowers, with a dark gray seed.

HENDECAGON. A figure of eleven sides.

HEPTAGON. A figure of seven sides and seven angles.

HEPTANDRIA. One of the Linnæan classes, including those plants which have seven stamens to the flower, as the horse-chestnut, chickweed, lizard's tail, &c.



HEPTARCHY. The seven kingdoms formed by the Saxons on their first settlement in England. They were all united into one kingdom by Egbert.

HERALD. An officer in England, whose business it is to proclaim war and peace, to marshal processions, and regulate armorial ensigns, &c. The heralds are six in number, and are distinguished by the names of Richmond, Lancaster, Chester, Windsor, Somerset, and York. They are all equal in degree, and have precedence only according to the seniority of their creation.

HERALDRY. The science which teaches the true use of arms; as how to blazon or describe them in proper terms, and how to marshal or dispose the different arms in an escutcheon or shield.

HERALDRY, HISTORY OF. Although the science of heraldry, as far as regards the distinctions of families by means of coat armour, is comparatively of modern date, yet the Romans were not without their marks of honour, which, being hereditary, served as a proof of nobility, and a title to a certain rank. This was known among them by the name of jus imaginum, which was the right of having the statues or images of their ancestors, that belonged to those only who were either of patrician rank or had risen to distinction in the state. He who had the privilege of using the statues or images of his ancestors was termed 'nobilis;' he who could only use his own was a 'novus homo,' or an upstart, like one who first procures a coat of arms; and he who had neither his own statues nor those of his ancestors, was termed 'ignobilis.' These images or statues were made of wood, brass, marble, and sometimes in waxwork, and were painted, according to the life, with the several emblems

of military honour which belonged to the individual. Thus the collar or chain on the statue of Torquatus, and the tuft of hair on that of Cincinnatus, were the trophies of which these brave warriors had despoiled their enemies.

These statues commonly stood in their courts in a cabinet of wood, whence probably originated our cabinets of arms, where the helmet, crest, gauntlet, spurs, banner, &c. were kept; and as, upon particular occasions, these cabinets were set open, and the statues were exposed to public view before the porch or gate of their houses, so the nobility and gentry have their coats of arms cut in stone, and painted in escutcheons over their gates. At their funerals those statues were borne before such as had the jus imaginum, whence in after times it became the practice, at the funerals of great men, to carry their ensigns of nobility, and the arms of those from whom they were descended, which, being all painted, are placed under the name of an atchievement on the house of the person deceased. As a farther proof that heraldic distinctions take their rise from the jus imaginum of the Romans, it appears that the law of arms among the Europeans in the middle ages was regulated by the civil law.

The introduction of armorial bearings, in place of the images and statues of the Romans, is to be ascribed to the northern tribes who overran Europe on the decline and fall of the empire. The Goths, Vandals, and other such people, were in the practice, like their ancestors, the Celts and Scythians, of painting on their shields the figures of animals, either for the purpose of rendering themselves formidable, or more probably by way of distinction; and although, from their martial character, their ensigns of honour were at first purely military, yet, by being transmitted to their posterity, they became badges of civil rank and honour; and, in process of time, other circumstances gave rise to bearings which were not purely military. Thus, on the establishment of the feudal system, the tenants of the king, or the great lords, represented on their shields the services they owed to their superiors by way of an acknowledgment of their fidelity, whence originated roses, cinquefoils, spurrowels, bows and arrows, hunting-horns, ships, &c. which are to be found so frequently in coats of arms. So, in like manner, the crusades gave rise to the figures of the cross, which is borne in a diversity of forms; and tournaments, which were introduced by Henry the Fowler in the tenth century, are supposed to have given rise to the fesse, pale, bend, and other ordinaries which represented the fillets or lists of different kinds which were worn by the combatants and those who attended. From the practice and ceremony of the herald's recording the names, arms, and proofs of the nobility of the knights at tournaments, the science of heraldry took its name; and as this ceremony was preceded by the blowing of a horn, blazon, which comes from the German 'blason,' to blow, is now used for a scientific description of coats of arms.

HERB (in Botany.) That part of the vegetable which rises from the root, and comprehends the stem and leaves, &c.

HERBÆ. Herbs; the fourth tribe into which Linnæus divided the vegetable kingdom.

HERBAL. A book giving an account of the names, natures, and uses of plants.

HERB-ROBERT, or FETID CRANE'S-BILL, *Geranium Robertianum*, L. An indigenous annual plant, growing on walls, hedges, rubbish, and stony places, flowering from May to October. This herb is in great repute among many farmers, for its efficacy against the staling of blood, and the bloody flux in cattle; in which cases it is said to be preferable to most of the remedies used on such occasions. In Germany, the Herb-Robert is employed in the process of tanning; and Dambourney obtained from this, as well as all the other species of Geranium, a more or less durable yellow dye.

HERCULANEUM. An ancient city of Naples, overwhelmed by an eruption of Mount Vesuvius in the reign of Titus; it was discovered in the year 1689, since which time many manuscripts, paintings, statues, and other relics of antiquity, have been discovered by digging.

HERCULES. A celebrated fabulous hero of antiquity, of extraordinary strength, the son of Jupiter and Alcmena, who travelled as far as the Straits of Gibraltar, and is said to have erected two pillars, one at Cadiz, in Spain, and the other at Ceuta, in Africa. His exploits are celebrated by the poets and historians of antiquity.

HEREDITAMENTS (in Law.) Immoveables, which a man may have to him and his heirs.

HERESY. An error in some fundamental doctrine of the Christian faith, or a private

opinion different from that of the catholic and orthodox church.

HERETIC. One tainted with heresy.

HERIOT (in Law.) The best beast that the tenant died possessed of, which was due to the lord of the manor.

HERISON. A barrier made of beams stuck with spikes, to block up a passage.

HERMETICAL SEAL (among Chymists.) A method of stopping glass vessels so closely that the subtlest spirit cannot escape.

HERNIA. Every kind of rupture, varied according to the part affected.

HEROIC POEM. A poem setting forth the exploits of some hero.

HEROIC VERSE. Hexameter verse, so called because it is used by poets in their heroic poems.

HERON. A bird similar in form to the crane and stork, but much larger, being seven feet in standing.

HERRING. A prolific fish, common in most seas, where they are found in immense shoals. The grand shoal of many millions, divided into columns of five or six miles in length, and about four in breadth, appears at the Shetland Isles in June, where they divide and branch off in all directions. They are also numerous in the eastern waters of the United States.

HERSCHEL. A planet, whose diameter is 35,112 miles, and distance from the sun 1800 millions of miles, its revolution being 80 of our years, and attended by six satellites.

HERSCHEL'S TELESCOPE. A colossal instrument, 45 feet long, and 4 feet in diameter, the speculum of which weighed above 2100 lbs. and it magnified 6400 times.

HERSE (in Fortification.) An engine like a harrow, stuck full of spikes.

HESPERIDÆ (in Botany.) A natural order of plants, including the myrtle tribe.

HESSIAN-FLY. An insect very injurious to farmers in the United States; it cuts off the stalk of grain, and sometimes nearly destroys the crops.

HETEROSCII (in Geography.) Those inhabitants of the earth which have their shadows falling but one way, as those living between the tropic and polar circles.

HEXAEDRON (in Geometry.) A solid figure of six equal sides.

HEXAGON (in Geometry.) A figure of six sides and six angles.

HEXAGYNIA (in Botany.) An order of plants which have six styles in the flowers.

HEXAMETER (in Poetry.) A verse consisting of six feet.

HEXANDRIA (in Botany.) One of the Linnæan classes, comprehending those plants which have six stamens in each flower, as the pineapple, bamboo, spiderwort, lily of the valley, arrow-grass, &c.

HHD. An abbreviation for hogshead.

HIATUS. A gap or chasm in verses; also, any deficiency in a manuscript which destroys the connexion. Also, an unpleasant opening of the mouth, when vowels end and begin words.

HICCOUGH, or HICCUP. A convulsive motion of the stomach.

HIDEBOUND (in Farriery.) A disease in horses and cattle when the skin cleaves to the sides.

HIDEBOUND (in Botany.) A disease in trees when the bark cleaves to the wood.

HIERARCHY. Church government, or the subordination of rank among the different orders of clergy.

HIEROGLYPHICS. Certain characters, figures, or signs, made use of by the Egyptians instead of letters, to express the conceptions of men, particularly the mysteries of their religion. In a general sense, an hieroglyphic is any symbol or figure which may serve to represent an object; thus, the astronomical characters are many of them of this nature, as the character of Mercury, ☿, which is the figure of his caduceus; that of Mars, ♂, which is supposed to represent his shield and spear; that of Saturn, ♄, which represents his sickle, &c.

HIGHLANDER. A native of the northern part of Scotland, the most northern section of the island of Great Britain. The southern portion, or Lowlands, of Scotland, is fertile and the climate mild, but the northern, or Highlands, is cold, mountainous and unfruitful. The inhabitants are hardy, enterprising, and temperate, and distinguished for their attention to education and religious duties. Edinburgh, the capital, contains a population of 180,000, and has long been celebrated as the seat of science and literature.

HIGHNESS. A title of honour given to a prince.

HIGHWAY (in Law.) A public or free passage for all persons.

HIGHWAYMEN. Robbers on the highways.

HINGE. The iron work on which a door is made to turn.

HIP. The upper part of the thigh.

HIPPOPOTAMUS, or THE RIVER-HORSE. An amphibious animal found in the Nile; it is from 12 to 20 feet long, supposed to be the behemoth of Job; the head is very large, the body fat, and the legs short and thick, the teeth large, and the tusks harder and whiter than those of the elephant. It lives chiefly in water, and walks at the bottom, raising its head occasionally for respiration. It feeds on grain and vegetables, and unless attacked, or ill used, is perfectly harmless; but its skin, for the most part, resists a bullet.

HIP-ROOF (in Architecture.) A particular kind of roof, which has neither gable heads, shred heads, nor jerkin heads.

HIPS (in Botany.) The ripe fruit of the dog-rose, which is principally made into a sweetmeat.

HISTORY. In its most general sense, an account or description of events and things in an orderly series, comprehending Civil or Political History, Sacred History, Ecclesiastical History, and Natural History: in a particular sense, a narrative of political events in the order of time. It is a study of great interest and value, and ought to be preferred to the imaginary histories of novel and romance writers.

HISTORY (in Painting.) A picture composed of diverse figures or persons, representing some transaction.

HITCH (among Mariners.) A sort of knot or noose for fastening a rope to any thing.

H. M. S. An abbreviation for His Majesty's Ship.

HOBSON'S CHOICE. A by-word, signifying that or none, taken from one Hobson, a livery-stable keeper at Cambridge, England, who obliged his customers either to take the horse that stood next the stable door, or to go without.

HODMAN. A bricklayer's labourer.

HOE. A husbandman's tool for cutting up weeds.

HOEING (in Husbandry.) The process of clearing the weeds with a hoe, and breaking up the earth on sown ground.

HOG. A well-known domestic animal, a variety of the wild boar; very prolific, and except when wild, or in defending their young, not ferocious; but ravenous and carnivorous with reference to their teeth, and ruminating; their feet are cloven. There are

various breeds, but the Chinese is the most preferred.

HOGSHEAD (in Commerce.) A measure of capacity, containing 63 gallons.

HOLD. The whole interior cavity or belly of the ship, where, in merchantmen, the goods are commonly stowed.

HOLDFAST. An iron hook for fixing any thing to a wall.

HOLERACEÆ. One of Linnæus' natural orders of plants, including shrubs and perennials, as rhubarb, &c.

HOLLANDER. A native of the Netherlands, a fertile and populous portion of Europe, the northern part of which was formerly called Holland, and the southern part Flanders. The land near the coast is very level and generally lower than the sea, and is preserved from being overflowed by dykes. It is drained by numerous canals, which are used instead of roads. The climate is cold and damp, but healthy; the inhabitants honest, industrious, frugal, and neat. They were formerly the most commercial nation in the world. Its capital is Amsterdam, and contains about 200,000 souls.

HOLLOW (in Architecture.) A concave moulding.

HOLLY. A prickly shrub, which forms an impenetrable hedge. The variegated hollies are remarkable for their beauty; some bear yellow berries, and others white.

HOLM-OAK. The evergreen oak.

HOLY GHOST. The third person of the Holy Trinity.

HOMAGE (in Law.) The oath of submission and loyalty, which the tenant, under the English feudal system, used to take to his lord when first admitted to his land.

HOME. A sea phrase for the situation which belongs properly to the tackling or parts of the vessel, as the anchor comes home when it is drawn out of the ground.

HOMICIDE (in Law.) The causing the death of a human creature, which is justifiable if justified by unavoidable necessity; excusable, if it happens by misadventure; and felonious, if done without excuse.

HOMILY. A plain discourse made to the people, instructing them in matters of religion.

HOMOGENEAL (in Physiology.) Of the same nature and properties; as, homogeneal particles.

HONE. A fine kind of whetstone used for setting razors.

HONEY. A thick, viscid fluid substance, collected by the bees from vegetables and flowers. It is distinguished into three kinds, namely, first, the virgin honey, which is the first produce of the swarm, obtained by draining from the combs without pressing; the second sort is thicker than the first, and is procured by pressure; the third is the worst sort, which is extracted by heating the combs over the fire, and then pressing them. In the flowers of plants, near the basis of the petals, are certain glands containing a sweet juice, which the bees suck up by means of their proboscis or trunk, and, flying with it to their hives, discharge it again from the stomach through the mouth into some of the cells of the comb. This honey is destined for the food of the young, but, in hard seasons, the bees are sometimes reduced to the necessity of feeding on it themselves, and die of hunger after they have eaten it all up. In France, a good swarm of bees will yield, in two years, nearly thirty pounds of honey; but honey is most abundant in the islands of the Archipelago, and other countries which abound with flowers throughout the year. From honey is made the pleasant liquor called mead.

HONEY-BAG. The stomach of the bee, which is the reservoir of the honey.

HONEY-COMB (in Husbandry.) The repository which the bees make in the hive for saving their honey in.

HONEY-COMB (in Gunnery.) A flaw in the metal of a piece of ordnance, when it is badly cast.

HONEY-DEW. A sort of mildew of a sweet taste, found early in the morning on plants, flowers, &c.

HONEY-FLOWER (in Botany.) A plant having the appearance of a shrub, and

bearing spikes of chocolate-coloured flowers in May, in each of which a quantity of black sweet liquor is found.

HONEY-SUCKLE (in Botany.) A shrub with a climbing stalk, the flowers of which form a tube in the shape of a huntsman's horn. They are produced in clusters, and are very sweet.

HONI SOIT QUI MAL Y PENSE. The motto of the order of the Garter, signifying, Evil be to him that evil thinks.

HONOUR, MAIDS OF (in Court Etiquette.) Ladies in a queen's household, who attend the queen when she goes out.

HONOURS OF WAR. Honourable terms granted to a vanquished enemy, when he is permitted to march out of a town with all the insignia of military etiquette.

HOOD. An upper covering for the head of a woman.

HOOD (at the University.) An ornamental fold that hangs down the back of a graduate, to mark his degree.

HOOF. The horny part of the foot of a horse or other cattle.

HOOK. A bended iron to hang things upon; also, a bent piece of iron or wire attached to a fishing-rod for catching fish.

HOOPOE. A beautiful crested bird, sometimes called the Marsh-cock, inhabiting Europe, Asia, and Africa, which is solitary and migratory.

HOP. A plant with a creeping root, the stalks of which climb and twist about whatever is near them; wherefore, in hop grounds, poles are fixed near to the plant for them to rise upon. Hops are said to have been introduced into England from the Netherlands in the 16th century: they are principally used to boil up with beer, in order to prevent it from turning sour, and to give it a strengthening quality. Hops require to be planted in open situations, and in a rich strong ground. The two best sorts are the white and the gray kind. These should be planted in hills about eight or nine feet asunder. About the beginning of July hops begin to blow, and are ready to gather about the latter end of August; when, by their strong scent, their hardness, and the brown colour of the seed, they may be known to be fit. The best method of drying hops is on a kiln, over a charcoal fire; when the stalks are brittle, and the top leaves easily fall off, they are properly dried. When taken from the kiln, they should be laid to cool for three weeks or a month before they are bagged.

HORIZON (in Astronomy.) A great circle of the sphere, which divides it into upper and lower hemispheres. The apparent or sensible horizon is that circle of the heavens which bounds the view of the observer, in distinction from the rational or real horizon, which is a circle encompassing the earth exactly in the middle. It is represented in the globes by the wooden frame which contains the globe.

HORN (in Natural History.) The hard, pointed bodies which grow on the heads of some granivorous animals, and serve either for defence or ornament; also, the slender bodies on the heads of insects, &c.

HORN (in Chymistry.) Is mostly composed of albumen, gelatine, and phosphate of lime, but the horns of the buck and stag are of an intermediate nature between horn and bone.

HORN (in Music.) A wind instrument, chiefly used in hunting and in the chase.

HORNBEAM. A tree that has leaves like the elm or beech tree; it was formerly used in hedgerows. The timber is very tough and inflexible.

HORNBLENDE (in Mineralogy.) A sort of slaty stone, of a green and blackish green colour. It is found in great abundance in many parts of Great Britain and America.

HORN-BOOK. The first book for children, containing the alphabet, which was formerly covered with transparent horn.

HORNED SNAKE. A native of Africa and Arabia, with a pair of horns above the eyes, and the species used by Egyptian conjurers, in performing their tricks.

HORNET. A large, strong, and stinging insect, of the wasp kind.

HORN-ORE (in Mineralogy.) One of the species of silver ore.

HORNPIPE. An animated sort of dance.

HORN-STONE. A species of flint.

HORNWORK (in Fortification.) An outwork which advances towards the field.

HOROLOGY. The science which treats

on the measuring of portions of time. The principal instruments used in the measuring of time are dials, clepsydræ or water-clocks, clocks, watches, and in some cases also hour-glasses.

The dial was doubtless one of the first instruments contrived for the measuring of time by means of the sun. The first on record is the dial of Ahaz mentioned in Isaiah. This king began to reign 400 years before Alexander, and within 12 years of the building of Rome. The Chaldee historian Berosus is said to have constructed a dial on a reclining plane almost parallel to the equator. Aristarchus the Samean, Thales, and others, are also mentioned as the makers of dials. The first sun-dial at Rome was set up by Papirius Cursor in the 460th year of the building of the city. The subject of dialling, or of making dials, has particularly occupied the attention of mathematicians within the last three centuries. Clavius is the first professed writer on the subject. Deschales and Ozanam in their Courses, and Wolfius in his Elements, have simplified the science. M. Picard gave a new method of making large dials by calculating the hour lines, and De la Hire, in his Dialling, gave a geometrical method of drawing hour lines from certain points determined by observation. The method of drawing primary dials on easy principles is to be found in the Dialling of Everhard Walper, and the Rudimenta Mathematica of Sebastian Munster. Among the more modern treatises on this subject may be reckoned that of Wells in his Art of Shadows, Ferguson in his Lectures on Mechanics, Emerson in his Dialling, Leadbetter in his Mechanic Dialling, Mr. W. Jones in his Instrumental Dialling, and Bishop Horsley in his Mathematical Tracts.

Scipio Nasica was the first who constructed the clepsydra, although it is supposed to have been invented by the Egyptians under the Ptolemies about 150 years before the Christian era. They serve for measuring time in the winter, as the sun-dials do in the summer; but they had two great defects: the one, that the water ran out with greater or less facility, as the air was more or less dense; and the other, that the water ran more readily at the beginning than towards the conclusion. The Egyptians, by this machine, measured the course of the sun; and Tycho Brahe, in modern times, made use of it to measure the motion of the stars, &c. Dudley also used the same contrivance in making all his maritime observations.

The invention of clocks has been ascribed to different authors; namely, to Boetius in the sixth century, to Pacificus, Archdeacon of Verona, and to Silvester, in the tenth century.

HOROMETRY. The art of measuring hours.

HOROPTER (in Optics.) A right line drawn through the point where the two optic axes meet, parallel to that which joins the two pupils.

HOROSCOPE (in the exploded science of Astrology.) The degree or point of the horizon rising above the eastern point of the horizon at any given time, when a prediction was to be made of a future event; also, a scheme or figure of the twelve houses.

HORSE. A domestic animal, that excels all others in beauty and usefulness. The most esteemed breeds of horses are, the Barbary or Arabian horses, remarkable for their fleetness; the English racehorse and hunter, which combines beauty with swiftness; and the English draught-horses, which are distinguished for their size and strength, &c. There is no creature so valuable as the horse, and none that oftentimes fares worse. The age of a horse under eight years old is mostly to be known by his teeth. The horse has twenty-four grinders; four tushes, or single teeth; and twelve front teeth, or gatherers. Mares in general have no tushes. The black mark or cavities denoting the age, are to be found in the corner front teeth, adjoining the tushes. At four years and a half old, the mark teeth are just visible above the gum, and the cavity is distinctly to be seen. At five, the remaining colt's teeth are shed, and the tushes appear. At six, the tushes are up, and appear white, small, and sharp, with a small circle of flesh growing near them; the horse's mouth is then completed, the corner teeth being filled up. At eight, the black marks disappear.

HORSE (in Military Affairs.) A body of horsemen.

HORSE (among Carpenters.) A frame or trestle on which boards or planks are laid to be cut and otherwise worked.

HORSE (among Printers.) A stage on which pressmen set their heaps of paper for printing.

HORSE. A sea term for a rope made fast to one of the shrouds, having a dead man's eye at the end.

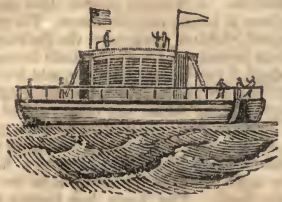
HORSE-CHESTNUT. A tree which yields a prickly nut.

HORSE-LEECH. A large sort of leech that fastens on horses.

HORSEMAN. One skilled in riding.

HORSEMANSHIP. The art of riding and managing horses.

HORSE-BOAT. A vessel without sails, moved by horse power; generally built double, and connected by a bridge. It is much used in the United States on ferries, but must soon be superseded by boats propelled by steam.



HORSE-RACE. A trial of the speed of horses, practised in England since the Restoration, and for which purpose every county and some towns are provided with courses, particularly Newmarket; at which, on successive days, horses, entered for the purpose, run single heats for sweepstakes, or the best two of three or more heats, for a purse or plate. The period of the races serves as a rendezvous for persons of rank, and for general purposes of pleasure, as well as gambling. Some race-horses have run a mile in a minute. Many of these public nuisances exist in the United States.

HORSESHOE (in Smithery.) A circular piece of iron fitted to the foot of a horse. This shoe is sometimes turned up in the winter season, to prevent the horse from slipping: this is called rough-shoeing. As an improvement upon this sort of shoeing, the clips have been made removeable at pleasure by means of a screw.

HORSESHOE (in Fortification.) A work, sometimes of an oval figure, raised in marshy grounds.

HORSESHOEING. The fitting and nailing a shoe to a horse's foot.

HORTICULTURE. The art of cultivating a garden, and rearing the finest kinds of plants.

HORTUS SICCUS. Literally, a dry garden; an appellation given to a collection of specimens of plants carefully dried and preserved. Various methods have been adopted by botanists for obtaining a hortus siccus; but that of pressing the plants that are to be dried, in a box of sand or with a hot smoothing iron, has been recommended. If pressure be employed, that is best effected by means of a botanical press made for the purpose, in which the plants are put, with sheets of dry paper between. At first they ought to be pressed gently, and occasionally taken out in order to see that none of the leaves are rumpled or folded. As they continue to dry, the pressure may be increased. When they are sufficiently dried, they may be taken out and laid on dry paper. Plants that are succulent require a longer and harder pressure, but for the most part three days' pressure is sufficient.

HOSANNA. A solemn acclamation used by the Jews in the Feast of Tabernacles.

HOSE (among Mariners.) A leathern tube for conveying water from the main decks into the casks.

HOSIERY. Stockings, and other goods in a shop that are spun or wove.

HOSPITAL. A house, erected out of charity, for the support and relief of the sick and poor.

HOSPITALLERS. An order of knights who built an hospital at Jerusalem for the entertainment of pilgrims.

HOST. The consecrated wafers in the Roman Catholic communion.

HOSTAGE. A person left as a surety for the performance of the articles of a treaty.

HOTBED. A bed made in a wooden frame with horse-dung, and covered with glasses, for raising early plants.

HOTCH-POT. Properly, flesh cut into small pieces, and stewed with herbs and roots; in Law, the putting lands together, that belong to coparceners, for the purpose of distributing them equally.

HOTHOUSE. A building, constructed in a garden, for the rearing of exotics and tender plants that require heat. The construction of hothouses, in general, differs little from that of greenhouses; because the design of both is to receive as much benefit as possible from the genial warmth of the sun, assisted by the heat artificially procured from subterraneous stoves and flues.

HOTTE. A basket of wicker work, much

used in France, for carrying burthens on the back. It is slung over the arms by means of straps, and great weights are thus carried with much facility.

HOUND. A kind of sporting dog, having pendulous ears.

HOUND'S TONGUE. A plant cultivated in gardens, bearing a pink flower.

HOUR. The twenty-fourth part of a natural day; the space of sixty minutes.

HOUR-GLASS. A glass for measuring the hours by the running of the sand from one part of the vessel to another.

HOUSE. A building, constructed with all conveniences for habitation.

HOUSE (among Genealogists.) A noble family, or an illustrious race descended from the same stock.

HOUSE (in Astrology.) The twelfth part of the heavens.

HOUSEHOLD. The whole of a family, including the mistress, children, and servants. To a king's household belong several officers, as the lord steward, the lord chamberlain, &c.

HOUSEHOLDER. An occupier or master of a house.

HOUSELEEK. A plant with a perennial root, that grows on the roofs of houses or the tops of walls.

HOWITZER. A kind of mortar, mounted upon a carriage like a gun.

HOY. A small vessel for carrying passengers from one place to another.

HUE AND CRY (in Law.) The common law process of pursuing a felon.

HUGUENOTS. The protestants of France, so called by way of contempt in the sixteenth century.

HULK. Any old vessel that is laid by, unfit for further service.

HULKS. Old vessels, stationed in the river Thames, wherein convicts are kept to hard labour.

HULL. The main body of a ship.

HUMMING-BIRD. A beautiful bird, the smallest of which are scarcely a quarter of an inch in length. Its chief food is the nectar of flowers, which it extracts with a humming noise like the bee, and suspends its nest from trees, laying two white eggs, the size of a pea.

HUMOURS OF THE EYE. Are three; namely, the aqueous or watery humour, which lies in the fore part of the globe; the crystalline, or icy, next to the aqueous; and the vitreous, or glassy humour, which is larger than the rest, and fills the backward cavity of the eye.

HUNDRED-WEIGHT. A measure of weight, equal to 112 lbs.; commonly denoted by the abbreviation *cwt.*

HURDLES. Frames of split wood or willows wattled together, serving for sheepfolds or fences.

HURDLES (in Fortification.) Frames of osier twigs laden with earth, for making batteries.

HURRICANE. A storm of wind, frequent in the West Indies, which arises from the conflict of opposite winds.

HUSBANDRY. The practical part of agriculture.

HUSH-MONEY (in Law.) A bribe given to a person not to reveal something to which he is privy.

HUSSARS. Hungarian horsemen, said to be so called from the huzza or shout which they gave at the onset in battle.

HYACINTH (in Botany.) A bulbous plant, the leaves of which are long and narrow, the stalk upright and naked, and the flower growing on the upper part of a spike.

HYACINTH (in Mineralogy.) A sort of pellucid gem, of a red colour, with a mixture of yellow.

HYADES. A cluster of five stars, in the face of the constellation Taurus.

HYÆNA. A ferocious beast, nearly allied to the wolf and dog. It infests burying grounds, and seizes whatever comes in its way. It is about the size of a large dog, of a tawney brown colour, the body marked with black bands. It has seldom been tamed.

HYBRID. An epithet for any animal whose sire is of one kind, and dam of another kind.

HYDATID. An animal substance, in shape like a bladder, and distended with an aqueous fluid, which grows in the viscera of the human body.

HYDRA. A fabulous monster, with many heads, that is said to have infested the lake Leonæa.

HYDRA (in Astronomy.) A southern constellation.

HYDRANGEA. A greenhouse plant, bearing a beautiful pink coloured flower, with a large head.

HYDRATE (in modern Chymistry.) The combination of water with other bodies in a solid state, as slacked lime, which, being a combination of lime and water, is a hydrate of lime.

HYDRAULICON, or WATER-ORGAN (in Music.) An instrument acted upon by water.

HYDRAULICS. That part of statics which treats of the motions of fluids, particularly of water issuing from orifices in reservoirs, or moving pipes, tubes, canals, rivers, &c. Among the machines which serve for the display of the phenomena of hydraulics, are the syphon, the pump, and the fire-engine. Among the moderns, the terms Hydraulics and Hydrodynamics, are employed indifferently to denote this science. See HYDRODYNAMICS.

HYDRODYNAMICS. Is properly that science which treats of the power or force of water, whether it acts by impulse or pressure; but in an extended sense, it is that branch of mechanics which treats of the motion of liquids or non-elastic fluids, and the forces with which they act on other bodies.

HYDRODYNAMICS, HISTORY OF. Although the doctrine of fluids and their motion is but partially treated by the ancients, yet, as respects the action of water in rivers, fountains, and aqueducts, it is certain that they must have had a considerable portion of practical knowledge. Aristotle treats on the nature of subterraneous waters, as also of those which are above. Hero of Alexandria made an artificial fountain, which bears his name. The Romans displayed their acquaintance with the art of carrying waters, in their famous aqueducts; and Frontinus, an engineer, who wrote on this subject, has given some few rules and hints on the motion of fluids. It is, however, only within the three last centuries, that this subject has attracted any particular notice. Benedict Castelli was the first who, in his treatise Dell' Amesura dell' Acque Currenti, investigated the measure of the flux of waters, which he found to depend upon the area of the section and the velocity of the water conjointly. Since his time, many discoveries and theorems have been made on the motions of fluids, by Sir Isaac Newton in his Principia; Daniel Bernouilli in his Hydrodynamique; D'Alembert in his Traite des Fluides; M. Bossut in his Hydrodynamique; M. Buat in his Principes d'Hydraulique; and M. Eytelwein in his Handbuch der Mechanik und der Hydraulik.

HYDROGEN GAS. A constituent of water, and the lightest species of ponderable matter hitherto known, which was discovered by Mr. Cavendish in 1766. It is an inflammable air, or an invisible aeriform fluid, which burns rapidly when kindled, in contact with atmospheric air, and forms what are now termed gas-lights. When combined with oxygen, it produces water. It is unfit for respiration, so that animals, when obliged to breathe it, die almost immediately. When gradually evolved at the wick of a candle or lamp from the compound of carbon and hydrogen in the tallow and oil, the explosion accompanying the evolution of the gas creates our domestic lights. So also with the flame of a coal fire. The engraving represents its manufactory in large quantities for the purpose of filling a balloon. The casks placed round are partly filled with water, from which hydrogen is extracted, by putting pieces of zinc into it, and two fifths of sulphuric acid, or vitriol. This producing an effervescence, the light gas passes out of the cask through the bent tubes which pass through a vessel of cold water under the cask placed in the centre, from which it passes through the bent tube into the balloon, and being so much lighter than atmospheric air, it rises with great force, and carries the balloon

with it into the upper regions of the atmosphere.

HYDROGRAPHY. A description of rivers, bays, lakes, and other pieces of water.

HYDROLOGY. That part of natural history which treats of and explains the nature and properties of waters in general.

HYDROMETER. An instrument for measuring the density and gravity, &c. of water and other liquids. That which is designed simply for ascertaining the specific gravity of different waters is more commonly called an aerometer or waterpoise, the term hydrometer being more commonly used to denote an instrument for measuring the specific gravity of spirits, though sometimes used indifferently for either. Dr. Desaguliers contrived an hydrometer for determining the specific gravities of different waters to such a nicety, that it would show when one kind of water was but the 40,000th part heavier than another.

HYDROMETRY. The mensuration of fluids, as to their density, gravity, &c.

HYDROPHOBIA, i. e. A DREAD OF WATER. A distemper arising from the bite of a mad dog, which is always accompanied with a horror of water and other liquids.

HYDROSCOPE. An instrument anciently used for the measuring of time.

HYDROSTATICAL BALANCE. A kind of balance contrived for the finding the specific gravities of bodies, solid as well as fluid.

HYDROSTATICAL BELLOWS. A machine for showing the upward pressure of fluids, and the hydrostatical paradox.

HYDROSTATICAL PARADOX. A principle in hydrostatics, so called because it has a paradoxical appearance at first view; it is this, that any quantity of water or other fluid, how small soever, may be made to balance and support any quantity or any weight, however great it may be.

HYDROSTATICS. The science which treats of the laws regulating the motions, pressure, gravitation, and equilibrium of fluid bodies, particularly water, and also of solid bodies immerged therein. This science is divided into three branches, namely, hydrostatics, properly so called, which treats of fluids in an equilibrium, their density, gravity, &c.; hydraulics, which treats of fluids in a state of motion; and pneumatics, which treats of elastic fluids. These two last branches will be found explained in their respective places.

The first branch of hydrostatics engaged the attention of Archimedes, who appears to have first attempted to determine the specific gravity of bodies, in consequence of the following circumstance. Hiero, king of Syracuse, having reason to suspect that a goldsmith, whom he employed to make him a crown of gold, had adulterated it with a quantity of silver, he requested Archimedes to detect the cheat. Accordingly, this philosopher procured two masses of gold and silver of equal weight with the crown, which he immersed in a vessel full of water, at the same time carefully noticing the quantity of water which each displaced; after which he immersed the crown of gold also in the same vessel, and by comparing the quantity of water which flowed over each time, he was enabled to ascertain the proportions of gold and silver in the crown. He is said to have been led to this idea by observing on one occasion, whilst he was bathing, that as he immerged his body, the water ran over the bath, whence he concluded that the water which ran out when his whole body was immerged, was equal in bulk to his body; and on the same principle he considered that if the

crown were altogether of gold, the ball of gold, being of the same bulk as the crown, would, when immersed, raise the water just as high as the crown immersed, but if it were wholly of silver, the ball of silver being immersed would raise the water no higher than the crown immersed; and if the crown was of gold and silver mixed in a certain proportion, this proportion would be discovered by the height to which the crown would raise the water higher than the gold and lower than the silver. The authors who have treated further on this subject may be found under the article HYDRODYNAMICS.

HYGROMETER. An instrument for measuring the degree of moisture and dryness of the atmosphere.

HYGROSCOPE. The same with hygrometer. In all names of instruments to which there are these two several terminations, as thermometer and thermoscope, the only difference is, that the first expresses something which measures, and the latter, which shows or exhibits to view.

HYMEN. The god of marriage.

HYMENOPTERA. An order of insects in the Linnæan system, having membranaceous wings, as the gall-fly, the saw-fly, the bee, the wasp, the ichneumon, &c.

HYPERBOLA. One of the curves formed by cutting a cone obliquely to its axis; and if the plane be produced so as to cut the opposite cone, another hyperbola will be formed, which is called the opposite hyperbola to the former.

HYPERBOLE. An exaggerated representation of any thing.

HYPOCHONDRIAC. One troubled with the spleen or melancholy.

HYPOTHENUSE. The longest side of a right-angled triangle.

HYPOTHESIS. A principle taken for granted, in order to draw conclusions therefrom for the proof of a point in question.

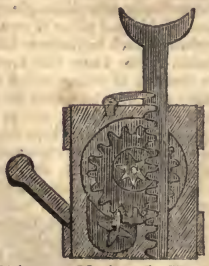
HYSSOP. A plant with long narrow leaves, bearing a crest of flowers. It is doubtful whether this be the hyssop mentioned in Scripture.

HYSTERICS. Spasmodic, convulsive affections of the nerves, to which women are particularly subject.

I. and J.

I, the ninth letter of the alphabet, used as a numeral signifies one, and stands for any numbers of units as often as it is repeated, as, II, two, III, three, &c. When placed before a higher numeral, it diminishes it by one, as, IV, four, IX, nine; and when after, it increases it by one, as, XI, eleven, XII, twelve, XIII, thirteen, &c.

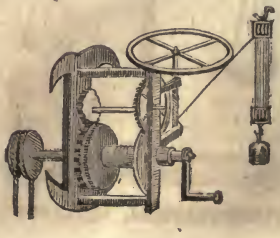
JACK (in Mechanics.) An instrument in common use for raising very great weights of any kind.



JACK (among Mariners.) The flag which is hung out in the bowsprit end.

JACK (in Natural History.) A kind of pike that is very destructive in fishponds.

JACK, SMOKE. A very useful instrument in kitchens, sometimes turned by the force with which smoke and rarefied air ascend in a chimney. The smoke-jack consists of a horizontal wheel, the radii of which are placed obliquely, so as to permit the smoke to pass through them; the axle then turns a small crank wheel, which works into another at right angles, and at the end is a pulley with a chain to turn a spit set before the fire, with any article intended to be turned and roasted. Many jacks are, however, turned by means of a weight, which pulls round a cylinder, and



thereby, with the intervention of a chain, rotates the spit.

JACKAL. A beast of prey nearly allied to the dog. It rouses other beasts by its cry, so that they are easily taken by the lion, whence it is called the lion's provider.

JACKDAW. A bird of the crow kind, having a white collar about its neck.

JACKS. Small bits of wood fixed to the keys of virginals, harpsichords, and spinnets.

JACK-WITH-THE-LANTERN, or WILL-O'THE-WISP. Vulgar names for the ignis fatuus or meteor which hovers in the night about marshy places, and seems to be mostly occasioned by an ascent from the ground of phosphuretted hydrogen gas, decomposed from animal and vegetable remains, whose own motions ignite it in the air. It appears like a candle in a lantern, and has sometimes caused travellers to lose their way.

JACOBIN. A partisan of the French revolution.

JACOBITES. A name given to the adherents of James II. at and after the revolution in England.

JACOB'S STAFF. A mathematical instrument for taking heights and distances.

JACOBUS. A gold coin in the reign of James I. value from $4 to $6.

JACTITATION OF MARRIAGE. A suit in the ecclesiastical court of England, when one of the parties boasts or gives out that he or she is married, which the other party denying, and no adequate proof of the marriage being brought, the offending party is enjoined silence on that head.

JADE. See NEPHRITE.

JAG (in Botany.) A division or cleft in a leaf.

JAGUAR. The tiger of the Brazils, about the size of a wolf, brownish yellow, with

black spots; very fierce and destructive in the woods of that country.

JALAP. The root of a West India plant, of the convolvulus tribe, of a black colour on the outside, and reddish within, with resinous veins. It was not known in England until after the discovery of America, and received its name from Xalapa, a town in New Spain. The principal constituent parts of jalap are resin and starch.

JAMB (among Carpenters.) Any supporter on either side, as the posts of a door.

JAMB (among Miners.) A thick bed of stone that obstructs the miners in their pursuing the veins of ores.

IAMBIC VERSE. Verses composed of iambic feet, that is, a short and a long foot alternately.

JANIZARIES. The grand seignior's guard, or the soldiers of the Turkish infantry, which have lately been abolished, and their places supplied by troops trained after the European manner.

JANUARY. The first month in the year, supposed to take its name from Janus, an ancient king of Italy.

JAPANESE IDOL. In Japan, and China, they still practise the ancient Egyptian, Grecian, and oriental system of representing the powers of nature, the virtues and vices, by images, often monstrous and fantastical, the worship of which is enjoined by the priest, and enforced by the faith of the people. The engraving represents one of these hideous idols.

JAPANNING. The art of varnishing and painting figures on wood, metal, &c. as is practised by the inhabitants of Japan, &c.

JAPONICA. The Japan rose.

JAR. A measure of capacity, as a jar of oil, containing from 18 to 26 gallons.

JASMIN. See JESSAMINE.

JASPER. A precious stone of a green transparent colour, with red veins. It is a sort of silicious earth, consisting mostly of silica, with a small portion of alumina, oxide of iron, magnesia, and potash.

JAVELIN. A sort of half pike or spear.

JAUNDICE. A disease proceeding from obstructions in the glands of the liver, which

causes the bile to overflow, and turns the complexion yellow.

JAW. A bone of the mouth, in which the teeth are fixed.

JAWS. The two pieces in the cock of a gun between which the flint is fixed.

JAY. A bird with particoloured plumage, of the crow kind. It is taught to speak.

IB. IBID. or IBIDEM. The same.

IBIS. A bird like a stork, which was worshipped in Egypt.

IBEX, or WILD GOAT. It has large knotty horns, reclining over its back, is of a yellowish colour, with a black beard. It inhabits the Alps.

ICE. Water in a solid state. When the water is exposed to a temperature below 32° of Fahrenheit, it assumes a solid state by shooting into crystals, which cross each other in angles of 60 degrees. Ice is always found at the same temperature or 32°; it is lighter than water, of course its bulk is larger than that of water, of which it is formed, and this increase of dimensions is acquired with prodigious force, sufficient to burst the strongest vessels.

ICEHOUSE. A building to preserve ice in hot weather; the ice being stowed as close as possible, in a pit, at the bottom of which, is a well to drain off the water from any part that melts.

ICH DIEN, i. e. I serve. The motto on the arms of the Prince of Wales, first taken by Edward the Black Prince.

ICHNEUMON. An Egyptian rat, and a bitter enemy to the crocodile, whose eggs it breaks.

ICHNEUMON (in Entomology.) A sort of fly, which deposits its eggs in the bodies of other insects.

ICHNOGRAPHY (in Architecture.) The ground plan of a building.

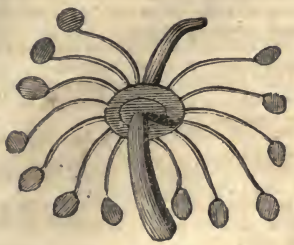
ICHNOGRAPHY (in Fortification.) A draught of the length and breadth of the works raised about a place.

ICHTHYOLOGY. That branch of general zoology which treats of fishes. These animals are divided into five orders, namely, into apodal, or those which have no ventral fins; jugular, which have the ventral fins placed more forward than the pectoral; abdominal, or those which have the ventral fins situated behind; thoracic, or those which have their ventral fins situated immediately under the pectoral; and the cartilaginous fishes, which have a cartilaginous instead of a bony skeleton. There are 2500 species.

ICHTHYOLOGY, HISTORY OF. The subject of fishes has engaged the attention of naturalists from the time of Aristotle to the present period. Aristotle, probably the first writer on the subject, divided fishes into cetaceous, spinose, and cartilaginous; he was, after a long interval, followed by several others, who treated of the fishes of particular places, as Ovid, who treats of the fishes of the Euxine, Appian of those of the Adriatic, and Ausonius of those of the Moselle, &c.; among the moderns, there are also some who have treated this subject partially, as Paul Jovius, who described the fishes of the Mediterranean, Schwenkfelt those of Silesia, Schonefelt those of Hamburgh, Marcgrave the fishes of Brazil, Russell and Francis Valentine those of Amboyna. Pliny was a general writer on the subject, and pursued no method; Ælian and Athenæus have only scattered notices of some few fishes. Among the moderns, Bellonius, Rondeletius, Gesner, Willoughby, Ray, Artedi, and Linnæus, have done most towards reducing this science to a systematic order.

ICOSANDRIA (in Botany.) The twelfth class in the Linnæan system, including plants with twenty stamens or more to their flowers,

as the melon, Indian fig, pomegranate, plum, &c.



IDIOM. A manner of expression peculiar to any language.

IDIOSYNCRACY. A peculiarity of constitution.

IDOL. Properly an image; but particularly the image of any false god.

IDOLATRY. The worshipping of idols.

IDYLL. A little pastoral poem, treating of shepherds and shepherdesses, such as the Idylls of Theocritus, Gesner, &c.

I. E. ID EST. That is.

JEHOVAH. The proper name of the Most High in the Hebrew.

JELLY. Any liquid, as the juice of fruits, coagulated into a tremulous, soft substance: when long boiled it loses the property of gelatinizing, and becomes analogous to mucilage.

JERBOA, a quadruped with very short fore legs, and long hind legs and tail.

JERUSALEM ARTICHOKE. A sort of sunflower, which resembles the artichoke in taste.

JESSAMINE, or JASMIN. A plant bearing fragrant flowers, which is commonly trained to the walls of houses.

JESUITS. An order in the Romish church, political and religious, corresponding with the chief at Rome, and acting as spies in all countries where they are tolerated. In 1773, they were abolished as dangerous to the peace of nations, but restored in 1820. It was founded by Ignatius Loyola in 1538.

JESUITS BARK. The Cinchona or Peruvian Bark, so called because it was first used by the Jesuit missionaries in Peru.

JET (in Mineralogy.) A deep black sort of bitumen.

JET D'EAU. The pipe of a fountain which throws up the water in the air.

JETSAM (in Law.) Any thing thrown out of a ship which is in danger of a wreck.

JEU D'ESPRIT. A lively, pretty thought.

JEWEL. The name of the precious stones which are worn as ornaments.

JEWELLER. One who works or deals in jewels and all kinds of precious stones.

JEWS. The descendants of the twelve tribes of Israel, who were so called after their return from the captivity of Babylon, from Judah, one of the sons of Jacob, whose tribe formed the most considerable part of those that remained of the Israelites. Although the Jews have lost the distinction of their tribes, and are dispersed throughout all nations, yet they remain a perfectly distinct people, and adhere to the religion of their forefathers. Their condition has been considerably meliorated in all Christian countries where they now reside. They are the negotiators of money between all nations, and every where distinguished for their successful enterprise, and accumulations of wealth. The lower classes are proverbial for dishonesty.

JEW'S-EAR. A kind of mushroom.

JEW'S-HARP. A musical instrument which is played between the teeth.

JEW'S-MALLOW. A plant whose leaves are produced alternately at the stalks. The flower expands in the form of a rose.

IGNIS FATUUS. See JACK WITH THE LANTERN.

IGNITION (in Chymistry.) The application of fire to metals till they become red hot without melting.

IGNORAMUS. An ignorant fellow, a pretender to knowledge.

IGNORAMUS (in Law.) The term used by the Grand Jury when they ignore or throw out a bill of indictment. It denotes 'We know nothing about it, or have not sufficient evidence respecting it.'

IGNORING A BILL (in Law.) The throwing out a bill of indictment by a grand jury, who indorse it with the word 'ignoramus.'

I. H. S. An abbreviation for Jesus Hominum Salvator, i. e. Jesus the Saviour of Mankind.

JIB. The foremost sail of a ship, being a large stay-sail extended from the outer end of the bowsprit, prolonged by the jib-boom towards the fore-topmast-head. In cutters and sloops the jib is on the bowsprit, and extends towards the lower mast-head. The jib is a sail of great command with any side wind, but especially when the ship is close hauled, or has the wind upon her beam, and its efforts

in casting the ship, or turning her head to the leeward, is very powerful and of great utility, particularly when the ship is working through a narrow channel.

ILEX. The name formerly for the holm oak, but now the generic name for the holly.

ILIAC PASSION. A nervous colic.

ILLUMINATING. The art of laying colours on initial capitals in books, or otherwise embellishing manuscript books, as was formerly done by artists called illuminators.

IMAGE (in Optics.) The appearance of an object made either by reflection or refraction.

IMMEMORIAL (in Law.) An epithet for any custom that has existed time out of mind, or beyond the memory of man.

IMMERSION (in Physiology.) The act of plunging any thing into water, or any other fluid.

IMMERSION (in Astronomy.) The term is applied to a planet, comet, or other heavenly body, when it approaches so near to conjunction with the sun, that it is enveloped in his rays, and lost to our observation. Immersion also denotes the beginning of an eclipse, or of an occultation, when the body or any part first begins to disappear, either behind another body, or in its shadow; as in an eclipse of the sun, when the disc is first covered by the edge of the moon; or also in an eclipse of the latter body, when she first enters the terrestrial shadow.

IMMOVEABLE (in Law.) Things not liable to be carried away; real property, as land, &c.

IMMOVEABLE FEASTS. Such as are constantly on the same day of the month, as Christmas, &c.

IMMUTABILITY. One of the divine attributes. The immutability of God is twofold, physical and moral. The first consists in this, that the divine essence does not, nor possibly can, receive any alteration; and the moral immutability is founded on the perfection of his nature, whereby he always wills the same things, or such as are best on the whole.

IMPACT. The single or simple act of one body upon another, so as to put it in motion.

IMPALEMENT. The frightful punishment, practised by tyrants, of driving a stake upwards through an object of their vengeance; and many naturalists amuse their unthinking minds by impaling insects.

IMPARLANCE (in Law.) A petition in court for a day to consider or advise what answer the defendant shall make to the plaintiff's declaration.

IMPEACHMENT. In England, a prosecution of a state criminal before the House of Lords, under articles of accusation voted by the House of Commons, which conducts the proceeding. In the United States, and in the different states, this prosecution is before Congress and the Legislatures, or the body by whom the accused may have been appointed to office.

IMPERATIVE (in Grammar.) One of the moods of a verb, used when we would command, entreat, or advise.

IMPERSONAL VERB (in Grammar.) A verb used only in the third person.

IMPLEMENTS. All things necessary for following any mechanical business, as tools, furniture, &c.

IMPORTATION. The bringing goods into a country.

IMPOSTS (in Architecture.) The capitals of pillars which support arches.

IMPRESSING. A compulsory mode of obtaining men for the king's service in the English navy.

IMPRESSION (among Printers.) The number of copies of any book printed off at one time.

IMPRIMATUR, i. e. Let it be printed. The form of a license for printing a book, which was formerly required in England.

IMPRIMIS. In the first place.

IMPROMPTU, i. e. off hand, without preparation, applied particularly to poetic effusions of the moment.

IMPROVISATORE. One who repeats or recites verses extemporaneously, as is the practice in Italy. This gift of reciting extemporaneous verses has been carried to a high pitch, it being no uncommon thing to see two masks meeting during the carnival, and challenging each other in verse, and answering stanza for stanza in a surprising manner.

IMPULSE, or IMPETUS (in Mechanics.) The single or momentary force with which one body strikes or impels another.

IN. An abbreviation for inch.

INARCHING. A method of ingrafting, called grafting by approach, where the stock and tree are properly joined.

INAUGURATION. The ceremony performed at the coronation of a king, or the investing a person with a new office, as President of the United States, &c.

INCA. The prince of the Peruvians.

INCARNATION. The act of assuming body, or taking flesh, as the Incarnation of our blessed Saviour.

INCENDIARY (in Law.) He who sets fire to houses maliciously.

INCH. A measure of length, being the twelfth part of a foot.

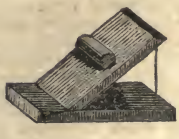
INCIDENCE, or LINE OF INCIDENCE (in Mechanics.) The direction or inclination in which one body acts or strikes on another.

INCIDENCE (in Optics.) The place where two rays meet.

INCLINATION. The mutual tendency of two bodies or planes to each other.

INCLINED PLANE (in Mechanics.) A plane inclined to the horizon, or making an angle with it, which is one of the mechanical powers. Its common application is to elevate

bodies, which are raised perpendicularly while they are moved up the plane; and the force gained is as the increased distance moved over, that is, as the length of the inclined plane is to the perpendicular height gained.



INCOGNITO, or INCOG. Literally, unknown, not to be recognised; a mode of travelling without any mark of distinction, which is sometimes adopted by princes and great people who do not wish to be recognised.

INCOMBUSTIBLE. A body that is incapable of undergoing combustion.

INCOMBUSTIBLE CLOTH. A sort of linen cloth made from a stone in the form of a talc; which stone is called lapis amianthus, and asbestos.

INCOME. Revenue, profit, or produce from any thing.

INCOMMENSURABLE (in Geometry.) A term applied to two lines or quantities which have no common measure by which they can be divided.

INCORPORATION (in Law.) The formation of a body politic.

INCORPORATION (in Chymistry.) The mingling the particles of different bodies together into one mass, in such manner that the different ingredients cannot be distinguished.

INCREMENT (in Fluxions.) The small increase of a variable body. Dr. Brook Taylor, to whom we are indebted for the doctrine of increments or finite differences, denoted his increments by a dot under the variable quantity, thus the increment of x was denoted by $\dot{x}$; others have employed a small accent, thus x', or thus $_{,}x$. M. Nicole uses another letter to denote the increment of x, or any variable, as by n; but Euler employs the character Δ, thus Δx the increment of x, and Δy the increment of y. Dr. Brook Taylor first published his Methodus Incrementorum in 1715, which was afterwards illustrated by M. Nicole in the Memoirs of the Royal Academy of Sciences for the years 1717, 1723, and 1724. In 1723, Emerson published his Method of Increments; but the writer who contributed most to the elucidation of this subject was Euler, who, in his Institutiones Calculi Differentialis, gave a new and extended form to this branch of analysis. Various other writers have since treated on this subject, among whom Lacroix, in his Traites des Differences, &c. is thought to have been the most happy.

INCUBATION. The process of a bird sitting on eggs and hatching its young; the time required for this varies in different birds; domestic fowls sit three weeks, ducks, geese, and turkeys, a month, pigeons eighteen days, &c.

INCUBUS, or NIGHT MARE. A disease which consists in an obstructed respiration, that produces the sensation in sleep of a weight pressing on the breast.

INCUMBENT. One in present possession of a benefice.

INDECLINABLE. Not varied by terminations, as an indeclinable noun.

INDEFINITE PRONOUNS. Words that are loose and undetermined in their meaning, as, whatsoever, any, every, &c.

INDEMNITY (in Law.) The saving harmless; or, a writing to secure one from all damage and danger that may ensue from any act.

INDENTURE (in Law.) An agreement or contract made between two or more persons, so called because it was indented or cut scallopwise, so as to correspond with another writing containing the same words.

INDEPENDENTS. A sect of Protestants in England and Holland, who govern themselves in their own congregations, without acknowledging any dependence upon or connexion with any other church.

INDEX (in Arithmetic and Algebra.) The number that shows to what power the quantity is to be raised, as, in 10^3, the figure ^{3} is the exponent or index.

INDEX (in Watchmaking.) The little stile or hand fitted either to a clock or watch, &c.

INDEX (in Literature.) An alphabetical table of the contents of a book.

INDIAN ARROW ROOT. The root of a plant growing in the West Indies, where it was formerly used as an antidote against poisons.

INDIAN FIG. Ficus Indica in the Linnæan system; another name for the Banian tree.

INDIAN RUBBER, or CAOUT-CHOUC. An elastic gum, a substance procured from a tree in South America, called the syphonia elastica. It is mostly brought into Europe and America in the shape of bottles, which are formed by spreading the gum over a mould of clay.

INDICATIVE MOOD (in Grammar.) That mood of a verb which simply affirms or denies.

INDICTED (in Law.) That is, accused of some offence by bill preferred to jurors at the suit of the people.

INDICTION, or CYCLE OF INDICTION (in Chronology.) A mode of computing time by the space of fifteen years, instituted by Con-

stantine the Great. The popes, since the time of Charlemagne, have dated their acts by the year of the indiction, which was fixed on the first of January. At the time of the reformation of the calendar, the year 1582 was reckoned the tenth year of the indiction. Now this date, when divided by fifteen, leaves a remainder seven, that is, three less than the indiction, and the same must necessarily be the case in all subsequent cases; so that, in order to find the indiction for any year, divide the date, by fifteen and add three to the remainder.

INDICTMENT. A bill or accusation drawn up in form of law, and exhibiting some offence, which is preferred to a grand jury preparatory to the trial in open court.

INDIGENOUS. Native, as applied to animals and plants.

INDIGO. A beautiful blue colour or dye procured from a plant growing in America, called the anil; in the Linnæan system, Indigofera. The indigo used by the dyers is a fæcula procured from the leaves of the plant, which are laid in vats full of water, and left to ferment. The liquor is then drawn off into another vat, and after having been well stirred up, it is drawn off, and what remains at the bottom is exposed to the air until it is thoroughly dry, when it is fit for use. The principal constituent parts of indigo are mucilaginous, resinous, and earthy matter, with some oxide of iron.

INDORSING. See ENDORSING.

INDUCTION (in Law.) Putting a clerk in possession of his living.

INDUCTION (in Logic.) A mode of argumentation or reasoning, when the species is gathered out of the individuals, and the genus out of the species, &c.: as, if it be true that all planets borrow their light from the sun, then, by induction, it is true that Jupiter, Mars, and each individual planet, do the same.

INDULGENCES (in the Romish Church.) Pardons for sin, granted by the pope to such as profess to be penitents.

INERTIA, or VIS INERTIÆ (in Physiology.) A passive principle, supposed by Sir Isaac Newton to reside in bodies, by which they persist in their motion or rest, and receive motion according to the force impressed upon them, and resist as much as they are resisted.

INFANT (in Law.) Any person under the age of twenty-one.

INFANTA. The title given to the eldest daughter of the king of Spain or Portugal.

INFANTE. The title given to the eldest son of the king of Spain or Portugal.

INFANTRY. The body of foot soldiers.

INFECTION. The communication of a disease by certain effluvia which fly off from distempered bodies, or from goods that are infected.

INFINITESIMALS. Indefinitely small parts.

INFINITIVE MOOD. The mood of a verb, so named because it is not limited by number or person.

INFINITY. A term applied to the vast and the minute, to distances and spaces too great to be expressed in any numbers of measures, or too small to be expressed by any fraction; and one of the incomprehensible, but necessarily existing wonders of the universe; for we can imagine no space, however distant, which there must not be space beyond, nor any atom, however small, which has not an upper and under side. But being located in a definite portion of space, we are more interested, affected, and wrought upon, by the infinitely little through which Providence works upwards, as it were, than by the infinitely great, for the perfect conception of which we are ourselves too small. Such considerations serve more than any others to exalt our conceptions of the Creator of the universe.

INFIRMARY. A place where the sick poor are received, or can get advice and medicines without charge.

INFLECTION (in Optics.) A multiplex refraction of the rays of light, caused by the unequal thickness of any medium.

INFLECTION (in Grammar.) The change which a word undergoes in its ending, to express case, number, gender, mood, tense, &c.

INFLECTION, POINT OF (in Geometry.) A point where a curve begins to bend a contrary way.

INFLORESCENCE. The manner in which plants flower, or in which flowers are fastened to the stem by means of the peduncle.

INFLUENZA. A sort of catarrh or disease from cold, so called because it was supposed to be produced by the peculiar influence of the stars.

IN FORMA PAUPERIS. See FORMA.

INFORMATION (in Law.) An accusation or complaint exhibited against a person for some criminal offence. An information differs from an indictment, inasmuch as the latter is exhibited on the oath of twelve men, but the information is only the allegation of the officer or individual who exhibits it.

INFORMER (in Law.) One who gives information, particularly private information, to a magistrate.

INFUSIBLE. Not to be fused or made fluid.

INFUSION. A method of obtaining the virtues of plants, roots, &c. by steeping them in a hot or cold liquid.

INFUSORIA. One of the Linnæan orders of animals, of the class vermes, including such as are simple, microscopic animalculæ, found in stagnant water.

INGOT. A wedge or bar of gold.

INGREDIENT. Any simple that enters into the composition of a compound medicine.

INGRESS (in Astronomy.) The sun's entering into the first scruple of Aries, &c.

INGROSS. See ENGROSS.

INHERITANCE (in Law.) An estate to a man and his heirs.

INJECTION (in Anatomy.) The filling the vessels of a dead subject with any coloured matter to show their ramifications.

INJECTION (in Surgery.) The forcing any liquid into the body by means of a clyster.

INITIALS. Letters placed at the beginning of words or sentences.

INJUNCTION. A kind of prohibition granted by courts of equity, principally with a view of preserving property pending a suit.

INK. A black liquor for writing; it is sometimes red, when it is called red ink. Black ink is of three kinds: namely, Indian ink, made in China, of lamp-black and size; printer's ink, composed of oil and lamp-black for the black ink, or of vermilion for the red ink; writing ink, composed of an infusion of nutgalls, sulphate of iron or copper dissolved in water, logwood, and gum arabic. The red ink is composed of Brazil wood, gum, and alum.

INK, SYMPATHETIC. See SYMPATHETIC INK.

INLAND. That place which is situated in the interior of a country, far from the sea-coast.

INLAND BILLS (in Commerce.) Bills payable in the country where they are drawn.

INLAND TRADE. Trade carried on within the country; home trade, as opposed to foreign commerce.

INLAYING (among Mechanics.) Working in wood or metal with several pieces of different colours, curiously put together.

IN LIMINE. In the outset; before any thing is said or done.

INN. A house of entertainment for travellers.

INNS OF COURT. Houses or colleges for the entertainment of students in the law; the principal of these societies at present are Lincoln's Inn, the Inner Temple, and the Middle Temple, in London.

INNUENDO (in Law.) A hint, a doubtful or obscure expression.

INOCULATION (in Surgery.) The operation of giving the small pox to persons by incision. When a person is inoculated with the cow-pox, it is called vaccination.

INOCULATION (in Gardening.) A kind of grafting in the bud; as when the bud of a fruit tree is set in the stock or branch of another, so as to make several sorts of fruit grow on the same tree.

INOSCULATION (in Anatomy.) The joining the mouths of the capillary veins and arteries.

IN PROPRIA PERSONA. In one's own person or character.

INQUEST (in Law.) An inquisition by jurors, the most usual mode of trial in cases both civil and criminal in this country.

INQUISITION (in Ecclesiastical Affairs.) A tribunal in some Roman Catholic countries for the suppression of heresies.

INQUISITOR (in Law.) Any officer, as the sheriff and the coroner, having power to inquire into certain matters; in Ecclesiastical Affairs, Inquisitor is the name of the judges of the Inquisition.

INROLMENT. Recording a deed or sale of lands in the office appointed by law for that purpose.

INSCRIBED (in Geometry.) An epithet for a figure inscribed in another, so that all its angles touch the sides or planes of the other figure.

INSECTA. The fifth class of animals in the Linnæan system, comprehending all insects except worms, which Linnæus has formed into a distinct class called vermes. The insecta are divided into seven orders, namely, the coleoptera, lepidoptera, hemiptera, neuroptera, diptera, and aptera. See ENTOMOLOGY.

INSECTS. Small animals that either creep or fly, having many feet, and bodies composed of joints and segments; in some cases they have the head distinct from the body, as flies, bees, &c. Those that are capable of being parted without destroying life were also included under this head, but Linnæus has classed them under the head of vermes, worms.

INSIGNIA. Ensigns.

INSOLUBLE (in Chymistry.) An epithet for any body which is not to be dissolved or separated.

INSOLVENCY (in Law.) The state of not being able to pay one's debts.

INSOLVENT. In a state of insolvency.

INSOLVENT ACTS. Acts passed by legislative bodies for the purpose of releasing from prison, and sometimes from their debts, persons who are in a state of insolvency.

INSPECTION (in Law.) A mode of trial, when the judges decide a point of dispute upon the testimony of their own senses.

INSPECTOR. A military officer whose duty it is to inspect regiments, &c.

INSPIRATION (in Anatomy.) The act of breathing or taking in the air by the alternate contraction and dilatation of the chest.

INSPIRATION (in Theology.) The conveying certain extraordinary notices or motions into the mind; or, in general, any supernatural influence on the human mind.

INSTALLATION. The ceremony of installing or putting into any office or dignity, as placing a dean or prebendary in his stall or seat.

INSTALMENT. The payment of a certain portion of a gross sum, which is to be paid at different times, or, as the phrase is, by instalments.

INSTANCE (in Civil Law.) The prosecution of a suit.

INSTANT. The smallest perceptible portion of time; that wherein we perceive no succession.

INSTANTER. Instantly.

IN STATU QUO (in Diplomacy.) A term signifying that condition in which things were left at a certain period, as when belligerent parties agree that their mutual relations should be in statu quo, or as they were before the commencement of a war, and the like.

INSTINCT. The sagacity or natural aptitude of brutes, which supplies the place of reason.

INSTITUTE. Any society instituted or established according to certain laws, or regulations for the furtherance of some particular object, such as colleges, or academies, as they are sometimes called, Literary Institutes, Mechanics' Institutes, and the like.

INSTITUTES. A book so entitled, containing the elements of the Roman or Civil Law. The institutes are divided into four books, and contain an abridgment of the whole body of the Civil Law.

INSTITUTION. An English term for the putting a clerk into possession of a spiritual benefice, previous to which the oath against simony, and the oaths of allegiance and supremacy, are to be taken; besides which the party must subscribe the thirty-nine articles, the articles concerning the king's supremacy, and the Book of Common Prayer.

INSTRUMENT. A tool to do any thing with.

INSTRUMENT (in Law.) A deed or writing drawn up between two parties, and containing several covenants agreed between them.

INSTRUMENT (in Music.) Any frame, structure, or contrivance, by which harmonious sounds may be produced.

INSTRUMENTAL (in Music.) An epithet for the music of instruments, as distinguished from the vocal music, or that of the human voice.

INSULATE. Properly, standing alone; as, in Architecture, an insulate column, that which stands alone.

INSULATED (in Chymistry.) A term for bodies that are supported by electrics or non-conductors, so that their communication with the earth, by conducting substances, is interrupted.

INSURANCE, or ASSURANCE (in Law.) A contract or agreement by which one or more persons, called insurers or assurers, engage, for a certain premium paid, to make good the loss of any house, ship, or goods, by fire, shipwreck, or otherwise. Casualties by fire are protected by annual payments. The premium on ships and merchandise is so much on the voyage.

INSURANCE COMPANIES. Companies of persons who form a fund, or capital, which they dispose of in insuring the property of others against casualties by fire, &c.

INTAGLIOS. Precious stones, having the heads of great men or inscriptions, &c. engraven on them, such as are to be seen on ancient rings, seals, &c.

INTEGER (in Arithmetic.) A whole number, as distinguished from a fraction; as one pound, one yard, &c.

INTEGRAL PARTS. Parts which make up a whole.

INTEGUMENTS (in Anatomy.) The coverings of any part of the body, as the cuticle, cutis, &c. The common integuments are the skin, with the fat and cellular membrane adhering to it; also, particular membranes, which invest certain parts of the body, are called integuments, as the tunics or coats of the eye.

INTENDANT. A military officer who has the inspection and management of certain affairs.

INTENSITY. The state of being affected to a high degree; the power or energy of any quality raised to its highest pitch.

INTERCALATION (in Chronology.) An inserting or putting in a day in the month of February every fourth year.

INTERDICT. A papal censure, prohibiting divine offices to be performed within any parish or town, &c.; which was put in force in England in the reign of King John, and in Germany several times at different periods.

INTEREST (in Commerce.) Money paid for the use or loan of money. The sum lent is called the principal; the sum paid by the borrower, the interest; and when the two are incorporated, the interest paid upon that is called compound interest, or interest upon interest.

INTEREST (in Arithmetic.) A rule by which the interest of money is computed, which is either simple or compound.

INTERJECTION. An indeclinable part of speech, serving to express the emotions of the mind.

INTERLOCUTORY ORDER (in Law.) An order which does not decide the cause itself, only some intervening matter relating to it.

INTERLOPERS (in Law.) Those who, without legal authority, intercept or hinder the trade of a company lawfully established to trade in a particular way or part.

INTERLUDE. An entertainment between the acts of a play, for the purpose of allowing the performers time to rest, &c.

INTERPOLATING (among Critics.) Inserting a spurious passage into the writings of some ancient author.

INTERREGNUM. The vacancy of a throne by the death or deposition of a king.

INTERREX. He who governs while there is no king.

INTERROGATION. A question put.

INTERROGATION, or NOTE OF INTERROGATION (in Grammar.) A mark thus (?) put at the end of a question.

INTERROGATIVES. Words used in asking a question, as why, wherefore, &c.

INTERROGATIVE SYSTEM. A mode of teaching by means of questions and answers.

INTERROGATORIES (in Law.) Questions in writing demanded of witnesses in a cause, particularly in the Court of Chancery.

IN TERRORÆM. By way of frightening or deterring.

INTERSECTION (in Mathematics.) The cutting of one line or plane by another.

INTERVAL (in Music.) The difference between two sounds, as respects acute and grave.

INTESTATE. One dying without a will.

INTESTINA (in Zoology.) An order in the Linnæan system, of the class vermes, including earthworms and leeches.

INTESTINE MOTION (in Physiology.) That motion which takes place in the corpuscles or smallest particles of a body.

INTESTINES. The convoluted membraneous tube in the body of animals. In the human subject, the intestines are divided into large and small, each of which consists of three distinct portions.

INTOLERANCE. The not tolerating or allowing of every man's private judgement in matters of doctrine or discipline.

INTONATION (in Music.) The act of sounding the notes in the scale with the voice, or any other given order of musical tones.

INTOXICATION. The state of intoxication greatly resembles that of an incipient palsy or apoplexy. Inebriated persons stagger in all directions; they stammer; every thing appears double; their tongue is in a manner paralytic, and they are deprived of the faculty of speech. This imbecility extends to the mind, which is thus rendered totally incapable of reflection. As the brain is overcharged with blood, the vessels pressing on that part are very liable to burst, from the least accidental concussion; and the unfortunate victim of such folly may expire, while he remains insensible of his danger.

INTRANSITIVE VERBS. Verbs that express actions, that do not pass over to an object; as, go, come, &c.

IN TRANSITU. During the passage from one place to another.

INTRUSION (in Law.) A violent or unlawful seizing upon lands or tenements.

INTUITION. The mental view of a matter, or the instantaneous act of the mind in perceiving the agreement or disagreement of ideas.

IN VACUO, i. e. In empty space, or in space comparatively empty.

INVALID (in Military or Naval Affairs.) A soldier or sailor wounded or disabled in war, and unfit for service.

INVENTION. Any new mechanical contrivance for assisting human labour.

INVENTORY. A catalogue or list of goods.

INVERSION (in Geometry.) The changing antecedents into consequents in the terms of proportion, and the contrary.

INUNDATÆ (in Botany.) One of the Linnæan natural orders, consisting of aquatic plants.

INVOCATION (among Poets.) An address to their favourite poet.

INVOICE. A bill or account of goods sent by a merchant to his correspondent in a foreign country.

INVOLUNTARY HOMICIDE (in Law.) The killing a man by accident, which differs from excusable homicide by misadventure in this, that the latter happens in the performance of a lawful act, but the former may be an indifferent or a positively unlawful act, which is murder or manslaughter, according to the nature of the case.

INVOLUTION. The raising any quantity to a given power by multiplying it into itself the required number of times; thus, the cube of 3 is got by multiplying 3, the root, into itself twice, as, $3 \times 3 \times 3 = 27$.

JOBBER. In England, one who buys and sells cattle for another. In the United States, a person who is engaged in a chance business.

JOCKEY. A man who rides horses at races; also, one who deals in horses.

IODINE. A deadly poison, of a black colour and metallic lustre, procured from kelp, which resembles chlorine in its odour, and power of destroying vegetable colours. Iodine is incombustible, but with azote it forms a curious detonating powder.

JOINER. A worker in wood, who fits together the several pieces which have been prepared for each other. He differs from the carpenter inasmuch as he does the finer work, that requires more skill.

JOINT (in Anatomy.) The place where any bone is articulated or joined with another.

JOINT (in Masonry.) The separation between the stones which is filled with mortar.

JOINT (in Joinery.) The parts where two pieces of wood join.

JOINT (in Botany.) The knot in the stalk of a plant.

JOINT (among Butchers.) The limb that is cut from the carcass of an animal.

JOINT STOCK (in Commerce.) A stock or fund formed by the union of several shares from different persons.

JOINT STOCK COMPANIES. Commercial associations, having a stock consisting of many shares: in such associations the shareholders gain or lose according to the number of shares which they hold.

JOINTURE (in Law.) The wife's separate estate, secured by will, or by marriage settlement; in other cases, the wife inherits one third.

JOISTS. Timbers framed into the girders or summers of a building.

IONIC ORDER (in Architecture.) An order so called from Ionia, in Lesser Asia.

The body of the pillar is usually channeled or furrowed with twenty-four gutters, and its length, with the capital and base, is twenty-nine modules, the chapiter being chiefly composed of volutes or scrolls.

JONQUIL. A plant of the Narcissus kind, the flowers of which are either single or double, and are much esteemed for their sweet scent.

JOURNAL. Any book in which is kept an account of what passes in the day.

JOURNAL (in Merchants' Accounts.) A book wherein every thing is posted out of the waste-book.

JOURNAL (among Publishers and Booksellers.) A periodical work, either daily, weekly, or monthly, &c.

JOURNAL (among Mariners.) A book wherein is kept an account of the ship's way at sea.

JOURNEYMAN. One who works by the day, the week, or the year, &c. for another.

IPECACUANHA. A medicinal root, which grows in America, and was introduced into Europe in the seventeenth century, when it was much esteemed for the cure of dysenteries, but afterwards fell into disuse.

IPSE DIXIT. Literally, he himself said it; a term signifying an opinion that rests on the word or authority of an individual only.

IPSO FACTO. The very fact.

IRIDIUM. A metallic substance procured from platina.

IRIS (in Anatomy.) A striped, variegated circle, next to the pupil of the eye.

IRIS (in Botany.) The flower de luce, or flag-flower, &c.; a plant with a bulbous root, which bears a beautiful blue flower. There are many species of it, as, the common yellow or water iris, the flag iris, the dwarf iris, &c.

IRIS (among Opticians.) The changeable colours which appear in the glasses of telescopes, &c.

IRON. One of the most useful and abundant metals, which was one of the first that was known and worked. This metal is easily oxidized, but is infusible except by an intense heat; it is, however, malleable at a less degree of heat, and several pieces may be united into one mass by a process called welding. Iron is the only metal that is susceptible of magnetic attraction. Pure iron is very rarely to be found; the principal varieties of iron are the cast or pig iron, or that which is immediately extracted from the ore; wrought iron, that which has gone through the process of melting in a furnace; and steel, that which has been heated in charcoal, and hardened by its combination with carbon. The substance called black lead, is a carburet of iron; green vitriol is a sulphate of iron; and the loadstone is an oxide of iron.

IRON. The name of several tools made of iron, particularly that which serves, when heated, to smooth linen after it has been washed.

IRONMONGER. A dealer in iron.

IRONMOULDS. Spots in linen, left after ironing.

IRONMOULDS (among Miners.) Yellow lumps of iron or stone found in chalk-pits.

IRON SMELTING. One of the most formidable of the manufacturing processes of man. The iron-stone is exposed in a suitable receptacle to the action of an intense furnace beneath, raised to the highest degree by means of enormous blasting-bellows, the roar of which, as the air is driven into and fixed in the fire, is deafening. The iron then runs out in a liquid stream, and being received in a channel formed of sand, is easily cast by the workmen into any desirable shape.

IRRATIONAL (in Mathematics.) An epithet applied to surd quantities.

ISINGLASS. A gelatinous matter, formed of the dried sounds of cod and other fish. It is the principal ingredient in the blancmanger of the cooks, and is also used medicinally.

ISIS (in the Mythology of the Egyptians.) The wife and sister of Osiris.

ISLAND. A country surrounded on all sides with water, as Great Britain, Ireland, &c.

ISLAND CRYSTAL. A transparent stone of the nature of spar, a piece of which laid upon a book, every letter seen through it will appear double. It was originally found in Iceland, whence it was called Iceland or Island Crystal, but is to be met with in France and other parts of Europe.

ISOCHRONAL or ISOCHRONOUS VIBRATIONS. Vibrations of a pendulum performed in the same space of time.

ISOPEREMETRICAL FIGURES. Figures having equal perimeters or circumferences.

ISOCELES TRIANGLE. A triangle having two sides or legs equal to each other.

ISSUE (in Law.) 1. The children begotten between a man and his wife. 2. The profits arising from lands, tenements, fines, &c. 3. The point of matter at issue between contending parties in a suit, when a thing is affirmed on the one side, and denied on the other. Issues may be either on matters of fact or matters of law.

ISSUE (in Medicine.) An artificial aperture, giving vent to noxious humours in the body.

ISSUES (in Military Affairs.) Certain sums of money given into the hands of agents for the payment of the army.

ISSUES (in Fortification.) Outlets in a town.

ISTHMIAN GAMES. Games formerly celebrated by the Greeks at the Isthmus of Corinth, every three, four, or five years.

ISTHMUS. A little neck of land joining a peninsula to a continent, as the Isthmus of Corinth, &c.

ITALIAN. A native of Italy, the country of the ancient Romans, and one of the most beautiful and interesting in Europe, having a fertile soil, mild climate, serene air, and great diversity of scenery, abounding with the ruins of ancient cities and buildings. The inhabitants of the northern parts are an enlightened people, distinguished for their proficiency in music, paintings, and sculpture; but those of the southern parts are ignorant, degraded, and immoral. The population of Rome, the capital, is about 140,000; but in the time of the Romans contained about 7,000,000.

ITALIC. A kind of letter used in printing, by way of distinction from the roman, as in this word, *Italy*.

ITCH. A cutaneous disease, supposed to be caused by an insect of the acarus tribe called the itchmite. This small insect, which is white, with reddish legs, is found in the small pellucid vesicles of the hands and joints affected with the itch.

ITEM. Also; a word used to denote an article added to an account.

ITINERANT. Going from place to place.

ITINERARY. A book pointing out the roads and distances of places, for the use of travellers.

JUBILEE. A time of public and solemn festivity among the ancient Hebrews. This was kept every fiftieth year; and began about the autumnal equinox. At this time all slaves were released, all debts annihilated, and all lands, &c. however alienated, were restored to their first owners. During this whole year all kind of agriculture was forbidden, and the poor had the benefit of the harvest, vintage, and other productions of the earth.

JUBILEE (in the Romish Church.) A solemnity instituted A. D. 1300, by Pope Boniface, to be observed every hundredth year, or every twenty-fifth year, as enjoined by Pope Sextus IV. for the performance of several ceremonies in order to obtain pardons, remissions from sins, indulgences, &c. The jubilee lasts a whole year, and as it brings in great stores of wealth to the popes, it has been called the Golden Year.

JUDAISM. The rites, customs, and doctrines of the Jews.

JUDGE (in Law.) One learned in the law, appointed to preside in a court of justice, and explain the actual bearings of the law on a case before the jury.

JUDGE MARTIAL, or JUDGE ADVOCATE, or ADVOCATE GENERAL. The supreme judge in courts martial.

JUDGMENT (in Law.) The sentence of the court pronounced by the judge on the matter in the record, either in cases of default, where the defendant puts in no plea; or of confession, where the defendant acknowledges the action; or, upon demurrer, where the defendant pleads a bad plea in bar; or upon a nonsuit or retraxit, where the plaintiff withdraws or abandons the prosecution. Judgments are either interlocutory, that is, given in the middle of a cause on some intermediate point, or final, so as to put an end to the action.

JUDICIAL (in Law.) An epithet for what appertains to a court, as judicial decisions, &c.

JUGULARES (in Ichthyology.) An order of fishes in the Linnæan system, including those that have the ventral fins placed before the pectoral, as the cod, the whiting, the haddock, &c.

JUGULAR VEINS. Veins running from the head down the sides of the neck.

JULIAN PERIOD (in Chronology.) A period of 7980 consecutive years, produced by the multiplication of the three cycles of the sun, moon, and indiction, into one another. It was so called because it consists of Julian years.

JULIAN YEAR. A space of time consisting of 365 days and 6 hours, so called from Julius Cæsar, by whom it was established. The calendar, which contained an account of Julian time, was called the Julian Calendar; and the time when it was first instituted, namely, 46 A. C., the Julian Epocha.

JULY. The seventh month in the year, so called in honour of Julius Cæsar.

JUNIPER TREE. A sort of tree or shrub, having long, narrow, and prickly leaves, and bearing a soft pulpy berry. This shrub is commonly found on heaths and barren hills,

but the berries which are used medicinally are brought from Germany. From the berries is made, in Holland, the gin called Hollands gin.

Juniper-berries possess a strong, not unpleasant smell; and a warm, pungent, sweet taste; which, on chewing, or previously well bruising them, is succeeded by a bitterish flavour. They require two years before they ripen, and yield, on expression, a rich, sweet, aromatic juice, bearing some resemblance to the taste of honey. These berries are useful carminatives; for which purposes a spirituous water, and an essential oil, are prepared from them.

JUNO (in the Heathen Mythology.) The wife of Jupiter, whose emblem was the peacock.

JUNO (in Astronomy.) One of the newly discovered planets.

JUNTA. A Spanish term for a meeting of men sitting in council.

IVORY. A finer sort of bone, or an intermediate substance between bone and horn, prepared from the tusk of the male elephant, which sometimes weighs 200 pounds. It is much used in various manufactures, and its coal forms ivory black. In decomposition 100 parts contain 24 of gelatine, and 64 of phosphate of lime.

JUPITER (in the Heathen Mythology.) The son of Saturn and Ops, and chief of the

gods, was the most honoured among men. His most usual attributes are the eagle, and thunder, and sometimes a figure of victory, and a spear, &c.

JUPITER (in Astronomy.) The largest planet of the solar system, being 89,522 miles in diameter, or 1400 times larger than the earth. It revolves round the sun in 4332 days 14 hours of our time, and on its own axis in 9 hours 56 minutes, inclined to the ecliptic 86° 54 1-2′. It is attended by four satellites.

JURISDICTION. The power or authority invested in any individual or court, of doing justice in the causes brought before them.

JURISPRUDENCE. Properly, a knowledge of the laws, or skill in interpreting and applying them; also, the laws themselves, together with all that relates to their administration. English jurisprudence comprehends the common and statute law, together with such parts of the civil and canon law as have been admitted into our courts.

JURY (in Law.) A certain number of persons sworn to inquire of and to declare the truth upon the evidence offered to them relating to the matter of fact. Juries are of different kinds, as the grand jury, petit jury, special jury, common jury, coroner's jury, &c. The grand jury, consisting of twenty-four men, is chosen to consider all bills of indictment preferred to the court, which they return as true, by writing upon them, 'billa vera,' true bill, or throw out by indorsing the word 'ignoramus.' The petit jury, consisting of twelve men, is chosen to try all causes civil and criminal: in the latter causes they give a verdict of Guilty or Not Guilty; in civil causes they bring a verdict either for the plaintiff or the defendant; and in real actions, either for the demandant or tenant. A jury is called special when it is returned for a particular cause, and common when it is returned by the sheriff in the same panel to try every cause at the same assizes.

JURYMAN. One who is sworn on a jury.

JURY-MAST. A great yard used in the place of the foremast or mainmast when it is broken down by a storm.

JUSTICE (in Law.) A magistrate appointed in a district or county to hear crimi-

nal charges, and decide in minor cases under the law.

JUSTIFICATION (in Law.) The showing good reason in a court, why one has done the thing for which he is called to answer.

JUSTS. Exercises in former times for the display of martial prowess at great solemnities, as the marriages of princes, &c.

JUXTAPOSITION (with Philosophers.) The state of being placed in contiguity or near to each other.

IVY. A parasitic or twining plant, that runs about trees, walls, &c. by means of roots and fibres from its branches. It shoots almost 20 feet in one year, and gradually extends to the top of the highest building.

K.

K, the tenth letter in the alphabet, stood as a numeral for 250, with a stroke over it thus, $\overline{K}$, for 250,000; as an abbreviation, it stands for Knight, as K. G. Knight of the Garter, K. B. Knight of the Bath.

KALE. A hardy kind of winter cabbage, with a curled leaf.

KALEIODOSCOPE. An optical instrument for creating and exhibiting an infinite variety of beautiful forms, and constructed in such a manner as either to please the eye, by an ever varying succession of splendid tints and systematical forms, or to enable the observer to render permanent such as may appear most appropriate for any of the numerous branches of the ornamental arts. It was invented by Dr. Brewster, and is chiefly used by calico-printers, potters, and carpet manufacturers, who are thus supplied with an immense variety of patterns.

KALI (called in Botany SALSOLA KALI.) A sort of marine plants, from which the alkali of commerce, called kelp, is procured by burning.

KALMUCS. A nation of Tartars inhabiting the government of Caucasia in Russia, which lies near the Caspian Sea.

KAMSCHATKAN. A native of Kamschatka, a peninsula in the northeast part of Russia. The climate of Kamschatka is cold,

and the soil barren, but the country abounds in wild animals, which yield rich and valuable furs. The coasts and rivers swarm with fish, which form the principal food of the inhabitants. The ground being covered with frozen snow during the greater part of the year, travelling is performed on sledges drawn by teams of dogs; and the engraving represents a traveller in his sledge, holding the reins of his dogs.

KAMSIN. A hot and dry southerly wind, common in Egypt and the deserts of Africa, which prevails more or less for fifty days. On the approach of this wind the sky becomes dark and heavy, the air gray and thick, and filled with a dust so subtle that it penetrates every where. It is not remarkably hot at first, but increases in heat the longer it continues, during which time it causes a difficulty of breathing, and when at its highest pitch, will cause suffocation and sudden death. To prevent this, it is necessary to stop the nose and mouth with handkerchiefs.

KAN. A magistrate in Persia, answering to a governor in Europe.

KANGAROO. An animal in New South Wales, four or five feet long, with a tail three feet, weighing 150 lbs. whose usual position is standing on its hind feet, its fore feet being employed like those of the squirrel. It lives on vegetables, and, instead of walking, leaps fifteen feet at a time. It is furnished, like the opossum, with a pouch in the abdomen, which is a receptacle for its young during the time of breeding, and is resorted to after the birth for the sake of warmth and protection.

KAOLIN. A sort of earth which is used as one of the two ingredients in porcelain.

KECKLING (among Mariners.) Winding

or twining small ropes about a cable or bolt-rope, to preserve them from galling.

KEDGER. A small anchor.

KEEL. The lowest piece of timber in a ship, running her whole length. Sometimes a second keel, or false keel, as it is called, is put under the first. This name is also given to a low flat-bottomed vessel used in the river Tyne, in England, for bringing coals from Newcastle.

KEELERS (among Mariners.) Small tubs used in calking ships.

KEEL-HAULING (among Mariners.) A punishment of offenders at sea by letting them down with ropes, and drawing them under the keel from one side to the other.

KEELSON (in Naval Architecture.) A principal timber in a ship, laid withinside across all the timbers.

KEEP. A strong tower in old castles, where the besieged retreated in cases of extremity.

KEEPER (in Law.) An officer in England, of different descriptions, as the Keeper of the Great Seal, a lord by his office, and one of the Privy Council, through whose hands pass all charters, commissions, and grants of the king under the Great Seal; Keeper of the Privy Seal, through whose hands pass all charters, &c. before they come to the Great Seal; besides which there is the Keeper of the Forests; the Keeper of the Touch, an officer of the Mint, &c.

KEEPING (among Painters.) The management of lights and shades, so as to preserve the proper distances of objects according to the rules of perspective.

KELP. The ashes of the salsola soda and other marine plants, which, when burnt in pits, and stirred about for a length of time, form hard masses, that are used in making soap. In this manner the mineral alkali called soda is procured. The preparation of this useful article should be commenced in the spring; for, if the burning be delayed till the harvest is far advanced, the rainy season of autumn renders the process more tedious and difficult.

KENNEL (among Sportsmen.) A place in which dogs are kept; also, the hole in which a fox lies.

KERMES. A round body of the size of a pea, and of a brownish-red colour, which contains a number of soft granules filled with a red colour. It is found in the southern parts of Europe adhering to the scarlet oak, and was till lately supposed to be a vegetable excrescence, but is now known to be the extended body of an animal filled with a numerous offspring, which are the little red granules.

KERMES MINERALIS. A preparation of antimony, so called from its beautiful deep orange colour.

KESTREL. A small kind of hawk.

KETCH. A small vessel constructed for carrying bombs.

KETCHUP. The liquor of mushrooms, which is much used as a sauce.

KETTLE-DRUM. A drum, the vellum head of which is spread over a body of brass.

KETTON STONE. An opaque compact sort of marble found in different parts of Britain.

KEY (among Smiths.) An instrument for opening a lock, having cavities to correspond to the wards of the lock.

KEY (in Gunnery.) The firelocks and springlocks of gun-carriages.

KEY (in Carpentry.) The last board that is laid.

KEY (in Music.) A name for the pieces of wood or ivory in an organ or harpsichord, which are struck by the finger in playing an instrument; also, the fundamental note, otherwise called the cleff or cliff.

KEY (in Commerce.) The same as QUAY.

KEY-STONE (among Architects.) The name for those stones which form the sweep of an arch, particularly the last or middle stone placed on the top of the arch or vault.

KIDNAPPING (in Law.) The forcible taking away, a man, woman, or child, in order to carry them abroad. This is an offence at common law, and punishable by fine and imprisonment.

KIDNEY-BEAN. A garden pulse having a papilionaceous flower, the pistil of which becomes a long pod, that is eaten before the seeds are fully formed.

KIDNEYS. Glands shaped like a kidney-bean, which separate the urine from the blood. There are two kidneys, one on each lumbar region.

KILDERKIN. A foreign liquid measure containing eighteen gallons.

KILN. A furnace in which chalk is burnt for making lime; also, a place where bricks, tiles, and malt, are burnt or dried.

KILN-DRYING. The process of drying wetted barley on a kiln for the purpose of making malt.

KIND (in Law.) In their natural state,

as tithe in kind, that is, in the commodities themselves as distinguished from their value in money; so, in Military Affairs, ratios supplied in kind.

KINDRED (in Law.) Persons of the same blood or descent.

KING. The sovereign ruler of a state. The law ascribes to the king of England, in his political capacity, immortality, for the king never dies; and on his decease, which is called his demise, his regal dignity is vested, without any interregnum or interval, at once in his heir.

KING AT ARMS (in Heraldry.) An officer at arms, that has the pre-eminence over the rest, and is otherwise called Garter King at Arms.

KINGDOM (in Law.) Any country governed by a king.

KINGDOM (in Natural History.) A general division of natural objects, as the animal, the mineral, and the vegetable kingdoms, in the Linnæan system.

KING-FISH. A European fish of remarkably splendid colours.

KING-FISHER. A very beautiful bird that feeds on fish. The top of the head and sides of the body are greenish, marked with traverse spots of blue; the tail is blue, and the breast and lower parts of the body are whitish with a tinge of orange. This bird is supposed to be the halcyon of the ancients.

KING-PIECE, or KING-POST (in Carpentry.) The chief beam under the roof.

KING'S BENCH, BANCUS REGIUS, or B. R. The supreme court of common law in England, consisting of the Lord Chief Justice, and three puisne or inferior judges, who hear and determine, for the most part, all pleas which concern the king's crown and dignity.

KING'S EVIL. A scrofulous disease, in which the glands are ulcerated, the gift of curing which was formerly attributed to the kings and queens of England from the time of Edward the Confessor. The practice of touching for the evil is now abolished.

KINO. A gummy resinous substance, exuding from incisions made in a tree called Pau de Sangue, a native of the inland parts of Africa, but of which there is no botanical account. From its sensible qualities, and also by its striking a black colour with a solution of green vitriol, this drug is remarkably astringent.

KIRK. The Scotch Presbyterian church.

KITE. A bird of prey, of the falcon kind, the tail of which is forked, and distinguishes it from all other birds of prey.

KITE. A plaything among schoolboys, consisting of a slight wooden frame covered with paper, and constructed so as to rise in the air. By the help of a long string it may be allowed to fly at the pleasure of the person holding it.

KNAPSACK. A leathern bag in which soldiers carry their provisions, &c.

KNEES (in Naval Architecture.) Pieces of timber bowed like a knee, which bind the beams and futtocks together.

KNELL. A passing bell, anciently rung at the time when a person was about to expire.

KNIGHT. A title of honour, originally bestowed on every man of rank or honour, that he might be qualified to give challenges, and to perform feats of arms. It is now an order of gentlemen next to baronets, or a mere honorary distinction, which entitles the person on whom it is conferred to be styled Sir D. D., and his wife Lady D. D. A knight is now made by the king touching him with a sword as he kneels, and saying, 'Rise up, Sir D. D.

The engraving represents an ancient knight in armour.

KNITTING. The process of weaving without a loom by the help of a needle.

KNOT (among Mariners.) The division of the log line, answering to half a minute, as a mile does to an hour.

KNOT (in Ornithology.) A fen-bird, the flesh of which is very delicious.

KNOUT. A Russian punishment, which consists in barbarous scourging, slitting the nostrils, and maimings of different kinds.

KNOWLEDGE. Knowledge is defined by Mr. Locke, to be the perception of the connexion and agreement, or disagreement and repugnancy of our ideas. It also denotes learning, as the improvement of our faculties by reading; experience, or the acquiring new ideas or truths, by seeing a variety of objects, and making observations upon them in our own minds. The branches of knowledge are the mathematical sciences, natural philosophy in its varieties, natural history of the three kingdoms of nature, moral philosophy, grammar, logic, and metaphysics, jurisprudence, political economy, history, and geography; while the belles-lettres include poetry, essay-writing, and works of fancy. No man, says the admirable Dr. Watts, is obliged to learn and know every thing; this can neither be sought nor required, for it is utterly impossible: yet all persons are under some obligation to improve their own understanding, otherwise it will be a barren desert, or a forest overgrown with weeds and brambles. Universal ignorance or infinite error will overspread the mind which is utterly neglected, and lies without any cultivation. The following rules, therefore, should be attended to for the improvement of knowledge: 1. Deeply possess your mind with the vast importance of a good judgement, and the rich and inestimable advantage of a right reasoning. 2. Consider the weaknesses, failings, and mistakes of human nature in general. 3. Be not satisfied with a slight view of things, but to take a wide survey now and then of the vast and unlimited regions of learning, the variety of questions and difficulties belonging to every science. 4. Presume not too much upon a bright genius, a ready wit, and good parts; for this, without study, will never make a man of knowledge. 5. Do not imagine that a large and laborious reading, and a strong memory, can render you truly wise without studious meditation. 6. Be not so weak as to imagine that a life of learning is a life of laziness. 7. Let the hope of new discoveries, as well as the satisfaction and pleasure of known truths, animate your daily industry. 8. Do not hover always on the surface of things, nor take up suddenly with mere appearances. 9. Once a day, especially in the early years of life and study, call yourselves to an account what new ideas you have gained. 10. Maintain a constant watch at all times against a dogmatical spirit. 11. Be humble, and courageous enough to retract any mistake, and confess an error. 12. Beware of a fanciful temper of mind, and a humorous conduct. 13. Have a care of trifling with things important and momentous, or of sporting with things awful and sacred. 14. Ever maintain a virtuous and pious frame of spirit. 15. Watch against the pride of your own reason, and a vain conceit of your own intellectual powers, with neglect of Divine aid and blessing. 16. Offer up, therefore, your daily requests to God, the Father of Lights, that he would bless all your attempts and labours in reading, study, and conversation.

KORAN. The book of the Mahometan doctrine, containing the revelations of their pretended prophet.

KOUMISS. A fermented liquor made by the Tartars, of mare's milk. Something similar is prepared in the Orkney and Shetland Isles.

KREMLIN. The palace of the Czars of Muscovy, at Moscow, famous for its splendour inside and outside. In the dreadful conflagration that so quickly followed the entry of the French army into Moscow, on the 14th of September, 1812, the Kremlin suffered very little. It stands in the central and highest part of the city; is of a triangular form, and about two miles in circumference; and is surrounded by high walls of stone and brick; which were constructed in the year 1491, under the reign of Ivan Vassilievitch I. It contains, besides the ancient palace of the Czars, several churches, two convents, the patriarchal palace, the arsenal, now in ruins, and one private house, which belonged to Boris Godunof before he was raised to the throne.

L.

L, the eleventh letter in the alphabet, denoting, as a numeral, 50, and with a line over it thus, $\bar{L}$, 50,000; as an abbreviation, it stands for libra, pound, and liber, book.

LA (in Music.) The syllable by which Guido denoted the last sound of each hexachord.

LABEL (among Mechanics.) A thin brass ruler, with sights, commonly used with a circumferentor, to take heights.

LABEL (in Heraldry.) A figure supposed to represent ribands, which in coats of arms distinguish the eldest son of a family.

LABEL (in Law.) A slip fastened to deeds or writings, or any paper joined by way of addition to a will.

LABIAL LETTERS. Letters requiring the use of the lips in pronunciation.

LABORATORY. A chymist's workshop; also, a workhouse where fireworkers and bombardiers prepare their stores.

LABYRINTH. A maze or place full of intricate windings. The labyrinth of Egypt, built by Psammiticus on the banks of the river Nile, contained, within the compass of one continued wall, one thousand houses and twelve royal palaces, all covered with marble; it had only one entrance, but innumerable turnings and windings, so that those who were in could not find their way out without a guide. This labyrinth was reckoned one of the seven wonders of the world.

LAC. A substance well known in Europe under the different names of stick-lac, shell-lac and seed-lac. Stick-lac is the lac in its natural state: seed-lac is the stick-lack separated from the twigs; shell-lac is that which has undergone the process of being purified. Lac was for some time supposed to be a gum, but improperly so, because it is inflammable, and not soluble in water. It is the product of the coccus lacca, which deposits its eggs on the branches of a tree in Thibet, and elsewhere in India, where lac is fashioned into rings, beads, and other trinkets. Sealing wax, varnishes, and lake for painters, are made from it, and it is also much used as a dye.

LACCIC ACID (in Chymistry.) An acid procured from gum lac, the component parts of which are supposed to be carbon, hydrogen, and oxygen.

LACE (in Commerce.) A work composed of many threads of gold, silver, or silk interwoven, and worked by means of spindles on a pillow, according to the pattern designed.

LACHRYMAL. An appellation given to several parts of the eye, from their serving to secrete or convey away the tears, as the lachrymal ducts, the lachrymal gland, the lachrymalia puncta, &c.

LACING (among Mariners.) The rope or line used to confine the heads of sails to their yards.

LACK (in Commerce.) The number of 100,000 rupees in India.

LACKER, or LACQUER. A sort of varnish applied to tin, brass, or other metals. The basis of lacker is a solution of the resinous substance of seed-lac in spirit of wine. In order to give a golden colour to the solution, two parts of gamboge are added to one of anotto. When silver leaf or tin is to be lackered, a larger quantity of the colouring materials is requisite than when the lacker is intended to be laid on brass.

LACTEAL VESSELS (in Anatomy.) Tender transparent vessels, which convey the chyle from the mesentery to the thoracic duct.

LACTIC ACID. An acid procured from sour milk by precipitating it with lime-water, and separating the lime with oxalic acid. It is supposed to consist of acetic acid and muriate of potash, with a small portion of iron and an animal matter.

LADDER, SCALING (in Fortification.) A particular kind of ladder made of ropes or flat staves, with which the men scale the walls of a place that is to be taken by surprise.

LADY-BIRD. A small red insect with black spots, generally found on leaves of bushes, &c.

LADY'S SLIPPER. A plant which grows wild, the flower of which is something in the shape of a shoe.

LADY'S SMOCK. A plant that grows wild, the flower of which consists of four leaves succeeded by narrow pods, which, when ripe, roll up and cast forth their seeds.

LAIR (among Sportsmen.) The place where deer harbour by day.

LAIRD. The name of a lord of a manor in the highlands of Scotland.

LAITY. The people, as distinguished from the clergy.

LAKE (in Geography.) A collection of waters in an inland place of great extent and depth; as, Lake Superior, &c.

LAKE (in Painting.) A fine crimson colour, between carmine and vermilion. It is formed by precipitation from the solution of the colouring matter with an earth or metallic oxide. Precipitates of different shades are obtained with alum, nitre, chalk, &c.

LAMA, or the GRAND LAMA OF THIBET. The prince and high-priest of the country, who is supposed to be immortal, and on the dissolution of his mortal frame his soul enters into the body of a new born child. He is worshipped as a supernatural being by his subjects, and is never to be seen but in the secret recesses of his palace, where he sits cross-legged on a cushion.

LAMB. The young of sheep while under a year old.

LAMINA. A thin plate of any metal.

LAMINÆ (in Anatomy.) The two thin plates or tables of the skull.

LAMP. A light made of oil and a wick: also, the vessel to receive the oil and the wick.

LAMP, ARGAND. This is a very ingenious contrivance, and the greatest improvement in lamps that has yet been made. It is the invention of a citizen of Geneva, in Italy; and the principle on which the lamp depends, is the admission of a larger quantity of air to the flame than can be done in the common way. This is accomplished by making the wick of a circular form, by which means a current of air rushes through the cylinder on which it is placed with great force; and, along with that which has access to the outside, exciting the flame to such a degree that the smoke is entirely consumed. Thus both the light and heat are prodigiously increased, at the same time that there is considerable saving in the expense of oil, the combustion being exceedingly augmented by the quantity of air admitted to the flame; and that what in common lamps is dissipated in smoke, is here converted into a brilliant flame.

LAMPBLACK. A colour procured from the soot of a lamp mixed with gum water.

LAMPERS. A disease in the palate of a horse's mouth.

LAMPREY. A sort of fish, which adheres firmly to rocks and other bodies by the mouth. It is in shape like an eel, and as slippery. Lampreys are esteemed as a delicacy, and are in season in the months of March, April, and May.

LAMPYRIS, (in Entomology.) The fire fly. There are eighteen species of this genus, the most remarkable of which is the noctiluca. The male of this insect is less than the female, which is commonly known by the name of glow-worm. The glow-worm is seen about the months of June, July, and August. The light which is perceived toward the lower extremity of its body, is produced by a phosphoric liquor.

LANCE. An offensive weapon, formerly used by knights in their tilts and tournaments.

LANCERS (in Military Affairs.) A body of men in Poland, armed with long lances, and mounted on swift horses.

LANCET (in Surgery.) An instrument used in bleeding, opening tumours, &c.

LAND (in Geography.) One main division of the earth, as distinguished from water; in Law, land includes not only arable land, meadow, pasture, &c. but also messuages and houses, for in conveying the land the buildings pass with it.

LAND FALL (among Mariners.) The first land discovered after a voyage.

LAND FORCES (in Military Affairs.) Troops employed only on land.

LANDGRAVE. The governor of a district in Germany.

LANDING (in Architecture.) The first part of a floor at the head of a flight of stairs.

LANDLOCKED. A sea term for a vessel when she is at anchor in a place not open to the sea.

LANDLORD (in Law.) He of whom lands or tenements are held.

LANDMARK (in Husbandry.) A boundary set between the lands of different persons.

LANDMARK (among Mariners.) Any mountain or other object which may serve to make the land distinguishable at sea.

LAND REMAINS. A term applied to remains of animals and vegetables, found in many places, on digging in the earth, mostly interchanged with strata of marine remains. They consist of bones of animals, or vegetables, whose species chiefly are extinct, or whose genera now flourish in warmer climates, the bones being often of animals of enormous size, either because such were common, or because they have endured longer. Vegetables, in

particular, are often found imbedded in coals, and coal-seams are in general considered as consolidations of ancient forests. In Iceland a forest was lately found with the trees erect, 50 or 60 feet below the surface of the earth, and prostrate forests have been found in Lancashire and Lincolnshire, in England. All the appearances are perfectly consistent with the Mosaic record. See Professor Ure's Geology, London, 1829.

LANDSCAPE (in Painting.) A picture representing any part of a country, with the various objects of fields, trees, hedges, houses, &c.

LANGUAGE. Human speech in general, or an assemblage of articulate sounds, forming words and signs for the expression of the thoughts of the mind.

LANGUAGE, HISTORY OF. That all men at first spoke one language we know on the authority of Scripture, and that that language must have been the Hebrew, the Holy Language, as it is called by the Jews, in which God was pleased to reveal his word to man, is clearly deducible from Scripture. In giving the names of Adam and many of his posterity, the inspired penman expressly declares them to be of Hebrew origin, for of Adam he says that he was expressly so called from the Hebrew, Adam, earth, because he was made out of the dust of the earth, and in a similar manner he explains the names of Cain, Abel, Abram, Isaac, Jacob, and others. When God thought proper to confound the tongues of men, he reserved the Hebrew tongue for his chosen people, who, in that tongue, were to keep and hand down his oracles to future ages.

Judging from the deviations which the earliest languages underwent, it does not appear that any new language was formed in the confusion of tongues at the tower of Babel, nor in fact that any other change took place than what was needful to answer the divine purpose of causing the dispersion of mankind. The Chaldeans or Babylonians being one of the first people formed after the flood, we find that their language, which has been handed down to us unchanged, differs the least of any from the Hebrew. The Syriac, which was spoken by the Canaanites, was in its primitive state so nearly allied to the Hebrew, that Abraham understood their speech; and although the Syriac, which is now extant, and which was spoken by the inhabitants of ancient Syria, underwent many changes by the intercourse of different people, yet it still retains many vestiges of its origin. In the time of Joseph, the language of the Egyptians, which is still extant under the name of Coptic, was so different that the Israelites required an interpreter in order to be understood, but notwithstanding they retained in their letters and in many of their words marks of their affinity to the Hebrew. This great diversity in the language of the Egyptians, the descendants of Ham, within so short a period after the flood, is not surprising, when we consider the peculiar character of this people for invention and device.

The Arabian is another language which, from the antiquity of the people, was probably formed at or very soon after the confusion of tongues. It is also very different from all the other tongues then existing, and surpassed them all in the number of its letters and the harmony and richness of its expression, but still it carries with it innumerable marks of its affinity to the Hebrew. The Æthiopian was in all probability a dialect of the Egyptian, at least in the names of its letters it is very similar to that language; but Ludolf observes that it bears a great affinity to the Hebrew and the Syriac, and a still greater to the Arabic, from which he supposes it to be derived. In fact, he maintains that competent knowledge of the Hebrew, or any other of the oriental languages, will enable a person to understand very much of the Æthiopic, there being several Hebrew roots and significations of Hebrew words in this language, which are not to be found in any other.

As the Phenicians, the descendants of the Canaanites, inhabited the maritime parts of the land of Canaan, it is not surprising that their language should be supposed to have been nearly the same as the Hebrew. Some vestiges of this affinity are to be found in the proper names of the Carthaginians, their descendants, who spoke a dialect of the Phenecian, called the Punic language: this latter language is also said to have had a tincture of the Chaldee and Syriac, which may be easily accounted for by the intercourse which these two trading nations held with all other people. A writer in modern times has also shown that the Maltese contains a number of Punic words, from which it is justly inferred that Malta was once in the possession of the Carthaginians.

The Persian, as it is now handed down to us, is confessedly posterior to the Arabic, to which it is nearly allied both in its primitive letters and whole construction, but it has been shown by writers that the Parthians or Persians were Scythians who mingled with the Elemites or original inhabitants of Persia, and gave to the Persian language that Celtic tincture which brings it nearer in accordance with the northern language of Europe. In the language of India and Armenia, there are strong marks of resemblance to the Persian; but as to the Chinese, it was probably one of the earliest tongues formed after the flood, as it bears few or no marks of affinity to any but the Hebrew.

In proof of what has been advanced on the oriental languages, the following alphabets are given:—

HEBREW AND CHALDEE.	SYRIAC.	COPTIC.	ETHIOPIC.	ARABIC.	ARMENIAN.
Aleph	Olaf	Alpha	Alf	Elif	Ail
Beth	Beth	Bida or Bila	Bet	Be	Bien
Ghimel	Gomal	Gamma	Geml	Gain	Gim
Dhaleth	Dolath	Dalda	Dant	Dal	Da
He	He	Ei	Haut	Dsal	Jetsch
Vau	Waw	Se	Waw	He	Sa
Zain	Zain	Zido	Zai	Waw	E
Cheth	Hheth	Hida	Hharm	Gim	Jeth
Teth	Teth	Thila	Tail	Hha	Thue
Jod	Yud	Jauda	Jamen	Ta	Je
Chaph	Cof	Kappa	Caf	Ye	J
Lamed	Lomad	Lauda	Lawi	Caf	Luim
Mem	Mim	Mi	Mai	Lam	Chhe
Nun	Nun	Ni	Nahas	Mem	Dza
Samech	Samecth	Exi	Saat	Nun	Kien
Gnain	E	O	Ain	Sad	Hue
Phe	Pe	Pi	Af	Ain	Dsa
Tsadi	Sode	Ro	Tzadai	Fe	Ghat
Koph	Kof	Sima	Kof	Kaf	Tee
Resh	Rish	Tain	Rees	Ke	Mien
Schin	Shin	Upsilon	Saut	Sin	Hi
Thau	Tau	Phi	Tawi	Shin	Nue
		Chi		Te	Sche
		V			Ue
		Shei			Tsche
		Fei			Pe
		Kher			Dsche
		Hori			Rra
		Jauju			Se
		Shima			Wiev
		Dhei			Tuim
		Epsi			Re
					Tsue
					Hium
					Ppiur
					Khe
					Fe
					O

As the above mentioned languages were spoken by the most ancient people, it is not surprising to find that they retained so many marks of their origin; but it is worthy of observation, that those languages which sprung out of them underwent greater changes in their external form, so as to give them an air of originality which does not in reality belong to them. Thus it is that the Greek, from the inventive genius of the people, acquired a peculiar structure and a richness of expression which made it pass for a primitive tongue, when in truth it is as much a derivative language as those which have since been formed. That it was indebted to the Egyptian for the names of its letters will be obvious to any one who should compare the Greek Alphabet with the Coptic, given above; and antiquarians have made it clear, that the roots of the Greek are to be traced either to the Egyptian, the Phenician, or the Pelasgian, which was spoken by the Pelasgi, a Celtic people, who first took possession of Greece, or the Isles of Elisha, as it is called in Scripture. It has also been clearly shown, that this Pelasgian had a common original with the Irish and Welsh, the primitive languages of Ireland and Britain, which were peopled by two kindred tribes, the descendants of Magog and Gomer, the sons of Japhet, who, at a very early period, proceeded from Scythia to Europe, and laid the foundation of all the modern European languages. Those people which inhabited the countries of Europe, except Greece, were afterwards called by the Greeks Keltæ or Gallatæ, and by the Romans Celti or Galli, Celts or Gauls.

The Latin was not formed until a colony of the Pelasgi or Greeks intruded themselves upon the Umbri or Gomerii, the aborigines of Italy, and so far prevailed over their language, that they modelled the mixture of the two upon the plan of the Greek in the formation of cases, moods, and tenses, to which were afterwards added many words of Egyptian or Phenician extraction, from the intercourse which took place between the Romans, Carthaginians, and Egyptians. As to the German, Danish, Swedish, and other northern languages, they all bear evident marks of their affinity not only to each other, but to that

of the Latin, with which they had a common Celtic original. At the same time, their ancestors, before their second irruption into Europe, under the name of Goths, Vandals, Huns, &c. had introduced such changes in the pronunciation and letters of their several languages, as gave them an appearance of originality and peculiarity. Besides, it appears that the Hungarian, Sclavonic, Dalmatian, and Russian, assumed a Greek character by a mixture of the Greek and its several dialects.

The French retains many vestiges of its Celtic original, but in consequence of the Roman conquest the additions of the Latin prevailed, to all which the people gave it a peculiarity both in its pronunciation, orthography, and structure. The same remark applies to the Spanish, which also underwent some additional changes from the incursions of the Moors, who ingrafted upon it many words of Arabian and Phenician origin. The Italian is obviously a dialect of the Latin, modified by and assimilated to the French and Spanish, doubtless during the period when France, Spain, and Italy, were governed by the emperors of the west.

The English, the last formed language in the world, is also remarkable for being compounded of a greater diversity of languages than any other. The ground work of the English is the Saxon, but there is not a language in Europe which has not contributed more or less to its formation. Many words were retained or borrowed by the Saxons from the language of the original natives, namely, the Welsh, which, as before observed, was one of the ancient Celtic dialects, of the same origin as the Saxon itself, but existed long prior to it. On the invasion and settlement of the Danes, some changes as well as additions were made in the language, which underwent still greater changes at the Norman conquest, by the admission of Norman as well as French words, and the modelling of the language itself into a form more nearly allied to the French. From this source are derived a vast number of the Latin words and some few words of Greek origin, but the most numerous additions from these resources have since been made by the English themselves, who have also gradually given it a distinct form and pronunciation that entitle it as much to the name of original as any of the other European languages that are of more ancient date. To this diversity in the origin of the English, and its aptitude to naturalize every foreign term, it is indebted for a variety and richness of expression which is not equalled by any other language in the world.

The following list of the names of the ten first numbers among the European nations, taken from Parson's Remains of Japhet, will suffice to show the affinity of the languages above mentioned.

IRISH.	WELSH.	GREEK.	LATIN.	ITALIAN.	SPANISH.	FRENCH.
1. Aon	Un	Εἷς	Unus	Uno	Uno	Un
2. Do	Duy	Δύω	Duo	Due	Dos	Deux
3. Tri	Tri	Τρεῖς	Tres	Tre	Tres	Trois
4. Ceathair	Pedwar	Τέσσαρες	Quatuor	Quatro	Quatro	Quatre
5. Cuig	Pymp	Πέντε	Quinque	Cinque	Cineo	Cinq
6. She	Chuech	Ἓξ	Sex	Sei	Seys	Six
7. Sheadg	Saith	Ἑπτὰ	Septem	Sette	Siete	Sept
8. Ocht	Uith	Ὀκτὼ	Octo	Otto	Ocho	Huit
9. Nyi	Naw	Ἐννέα	Novem	Nove	Nueve	Neuf
10. Deic	Deg	Δέκα	Decem	Dieci	Diez	Dix

GERMAN.	DUTCH.	SWEDISH.	DANISH.	SAXON.	ENGLISH.	POLISH.	RUSSIAN.	HUNGARIAN.
1. Ein	Een	En	Een	Æne, an	One	Jeden	Yedna	Egi
2. Zwei	Twee	Twa	Toe	Twa, twy	Two	Dwa	Twa	Ketto
3. Drei	Dru	Tre	Tre	Drie	Three	Trizi	Tree	Harum
4. Vier	Vier	Fyra	Fire	Feower	Four	Czterzti	Shatirz	Negy
5. Fiinf	Vyf	Faem	Fem	Fife	Five	Diecz	Pet	Et
6. Seehs	Zes	Sex	Sex	Six	Six	Szesez	Chest	Hat
7. Sieben	Zeven	Sju	Syv	Seofen	Seven	Sieden	Set	Het
8. Acht	Acht	Aotta	Otte	Eaht	Eight	Ism	Wossim	Niolez
9. Neum	Neghen	Nio	Nie	Negen	Nine	Dziewree	Devit	Kilenez
10. Zehen	Tien	Tio	Tie	Tyn, tien	Ten	Dzesziec	Disset	Tiz

LANNER. A sort of hawk, formerly much esteemed in falconry. It is next to the buzzard in size.

LANTERN, or LANTHORN, a well known contrivance, which serves to carry a candle, without exposing it to the air, or otherwise incurring danger.

Lanterns are usually made of glass, horn, or other transparent matter, for the transmission of light; but, if they were covered externally with thin wire-work, many accidents might be prevented in stables and barns, as the lanterns might thus be rendered less liable to injury from external accidents, while the communication of light would not be impeded.

LANTERN FLY. A remarkable insect of South America, that emits an extraordinary phosphoric light from the hollow of its head.

LANYARDS (among Mariners.) Short pieces of rope fastened to several parts of a ship.

LAPIDARY (in Commerce.) One whose business it is to cut, shape, and polish, precious stones, by means of motion or friction, produced by wheels of various metals, according to the nature of the stone to be worked. Thus, diamonds require wheels of soft steel; rubies, sapphires, and topazes, copper wheels; emeralds, amethysts, &c., leaden wheels; worked with oil and various powders.

LAPIS INFERNALIS. A sort of caustic composition.

LAPIS LAZULI (in Painting.) A stone of an azure or blue colour, of which the paint called ultramarine is made. It is a copper ore, very compact and hard, and is found in lumps of a beautiful blue colour, richly variegated with clouds of white and veins of shining gold colour.

LAPLANDER. A native of Lapland, a country situated in the northern part of Russia, Norway, and Sweden. Lapland is a cold, gloomy, and barren country, thinly inhabited. The reindeer form their principal wealth, supplying them with food and beasts of burden. In summer the sun does not set for many weeks in the northern part. They have no regular government, and are ignorant, superstitious, and miserable.

LAPLAND BAPTISM. This ceremony is represented in the engraving, with the costume of the country.

LARBOARD. A sea term for the left hand side of a ship, when looking towards the stem or head.

LARCENY. The felonious and fraudulent taking away the personal goods of another.

LARCH. A lofty tree of the pine kind, bearing leaves like those of the pine, and a sort of mushroom for the fruit. The gum of this tree is called Venice turpentine. The leaves fall off in winter. The timber, which is remarkably durable, is used in building ships.

LARDER. The room where meat is kept, or salted.

LARES. The domestic or household gods among the Romans, placed in some private part of the house, which the family honoured as their protectors.

LARGE (in Music.) The greatest measure of musical quantities; one large containing two longs.

LARGO (in Music.) A slow movement.

LARK. A well known singing bird, the most remarkable species of which is the skylark, that sings so beautifully as it is soaring in the air.

LARKSPUR. A plant cultivated in gardens, the flower of which consists of many dissimilar petals or leaves, some of which end in a tail or spur.

LARVA. The grub or caterpillar state of this insect, so called by Linnæus, but by others the eruca or caterpillar.

LARUM. A sort of clock that makes a noise or alarm at a certain hour.

LARYNX (in Anatomy.) The top of the windpipe, below the root of the tongue.

LATH (in Carpentry.) A long, thin piece of wood, nailed to the rafters of a wall or roof to receive plaster or covering.

LATHE. The engine used in turning wood, &c.

LATIN. The language spoken by the ancient Romans, or the inhabitants of Latium, (from which it derives its name,) which, by their conquests, they spread over Europe, and, being adopted by the authorities, became the language of ambition, and used in law, physic, and divinity; hence it became the language of the learned, which it still continues to be.

LATITUDE (in Geography.) The distance of a place from the equator, which is either northern or southern, according as the place is north or south. The latitude cannot exceed 90 degrees, the distance of the equator from the north or south pole.

LATTEN. Iron plates tinned over, of which tea canisters are made.

LAVA. The mineral substance which flows from Mount Etna, Vesuvius, and other volcanoes, is of a grayish colour, light, moderately hard, and brittle, and easily frangible: it generally attracts the magnetic needle, and is easily fusible into compact glass.

LAUDANUM. A soporific tincture, containing the finer and purer parts of opium, drawn in water and spirits of wine, and then reduced to its due consistence.

LAVENDER. A plant with a shrubby stem, much branched, with numerous hoary leaves. The flowers are produced in terminating spikes from the young shoots on long peduncles. The leaves, stalk, and flower, yield a fragrant perfume, and from the latter are prepared an essential oil, a simple spirit, and a compound tincture.

LAUNCE-FISH, or SAND LAUNCE. A sea fish which buries itself on the recess of the tide a foot deep in the sand. It is generally used for baits.

LAUNCH. A particular kind of boat used in underrunning the cables of different ships that are fastened across each other.

LAUNCHING. Putting a ship out of dock, and conveying her into the water.

LAUNDRESS. One whose business it is to wash and get up linen.

LAUREATE, or POET LAUREATE. A title given to the king's poet.

LAUREL. An evergreen tree, having broad, thick, shining leaves. The flower consists of five petals or leaves, which expand in the form of a rose.

LAURISTINUS. The wild bay tree.

LAW. In its most extensive sense, the rule of conduct prescribed by the supreme power of a state.

LAWN. A plain or level space, covered with grass, in a pleasure ground.

LAY (in Ecclesiastical Law.) An epithet for whatever belongs to the people at large, in distinction from those who are in holy orders.

LAY (with Poets.) A kind of ancient poetry, consisting of short verses.

LAY BROTHERS. In the Romish church, such as performed the secular and servile offices in a convent.

LAYER (in Horticulture.) A young sprout bent down and covered with mould for raising fresh plants.

LAYMAN (in Ecclesiastical Law.) One who has not taken holy orders.

LAYMAN (in Painting.) A statue of wood, whose joints are so made that it may be put into any posture.

LAZARETTO. An hospital for lazars or leprous persons.

LAZULITE. A mineral of the silicious order, of which lapis lazuli is the principal species. Its principal constituents are silica, alumines, carbonate of lime, sulphate of lime, oxide of iron, &c.

LEAD (in Mineralogy.) A bluish white metal, very soft and flexible, and easily beaten into thin plates by the hammer. In a strong heat it boils and emits flames, and if during that time it is exposed to the air, its oxidation proceeds very rapidly. It is very brittle at the time of congelation. Most of the acids attack lead, but it unites with most of the metals, particularly tin, which in union with lead forms the solder used by plumbers. The carbonate of lead, which is a powder, is better known by the name of white lead; the red oxide of lead is otherwise called red lead.

LEAD, or SOUNDING LEAD. A sea term for an instrument which is used to discover the depth of water at sea.

LEAF (in Botany.) A membranaceous and sometimes succulent part of a plant, which arises from the stem. Leaves appear to assist the process of vegetation by communicating the air to the whole of the plant, which on that account is found to be exceedingly tender of its leaves, and to suffer much from any rough treatment which they may receive.

LEAF. A term applied to other objects resembling a leaf in shape or make, as the leaf of a book; also, leaf gold or silver, gold or silver beaten into plates of exceeding thinness.

LEAGUE (in Geography.) A measure of length, containing a certain number of geographical paces, according to the usage or computation of different countries. A league at sea, where it is mostly used by us, is equal to three miles, or three thousand geometrical paces: the league in France contains three thousand five hundred paces. The Dutch or German league four geographical miles. Seventeen Spanish leagues are equal to a degree, or sixty-nine and a half statute miles.

LEAGUE (in Politics.) A treaty of alliance between different states or parties.

LEAK. Any hole or chink in a vessel which admits the water, particularly applied to a ship at sea.

LEAKAGE (in Commerce.) An allowance made to merchants for the leaking or running of vessels.

LEAP (in Commerce.) A measure equal to half a bushel.

LEAP-YEAR (in Chronology.) Every fourth year, when February is accounted 29 instead of 28 days, owing to the year being 5 hours and 49 minutes longer than the usual 365 days, and the 11 minutes are recovered by not accounting the centenarian year as leap-year. Every other year divisible by 4 without a remainder, is a leap-year.

LEASE (in Law.) A conveyance of lands, generally in consideration of rent or other annual recompense, for term of years, for life, or at will, provided it be for a shorter term than the lessor has in the premises.

LEATHER. The skins of animals, prepared by the felt-monger, tanner, and dyer, and used for various purposes of clothing and furniture. The first takes off the hair, &c.; the second expels the unctuous parts, and substitutes oak bark and the tanning principle in the pores; and the latter furnishes and dresses it for use.

LEAVEN. A piece of sour dough put to ferment a mass of bread.

LEAVES. (in Botany.) Are defined by Linnæus to be the organs of motion, or muscles of a plant: according to Dr. Darwin, they constitute the lungs of each individual bud. Leaves are of a deeper green colour than the foot-stalks on which they stand; being formed by the expansion of the vessels of such stalks that produce several ramifications, mutually intersecting each other, and thus making a kind of net; the meshes of which are filled up with a tender porous substance, variously called the pulp, picth, or parenchyma.

LEDGE (in Geography.) A long ridge of rocks near the surface of the sea.

LEDGER. The chief book used in merchants' accounts, wherein every man's particular account is kept; and also all the goods bought and sold are distinctly placed each by themselves, as debtor on the left hand page, and creditor on the right hand.

LEE. A sea term for that part which the wind blows upon, or that is opposite to the wind, as the lee shore.

LEECH. A well-known insect that lives in the water, and is commonly used in bleeding. The two principal species are the medicinal leech, which is employed to draw blood where the lancet is less safe; and the horse leech, which is larger, and applied to horses for the same purpose.

LEECHES. A sea term for the edges of a sail.

LEEK. A potherb having long cylindrical and coated roots. It has something of the flavour of the onion.

LEES. The dregs of wine.

LEG (in Mathematics.) The two sides of a triangle are called the legs.

LEG. A sea term for ropes put through the bolt ropes of the main and foresail.

LEGACY (in Law.) A bequest or gift by testament of any personal effects; the person bequeathing is called the testator, and he to whom it is bequeathed the legatee.

LEGATE. A cardinal or bishop sent by the pope as his ambassador to sovereign princes.

LEGEND. A book used in the ancient Roman churches, containing the lessons that were to be read; also, a chronicle or register of the lives of saints.

LEGEND (among Antiquarians.) The inscription on the edge of a medal or coin.

LEGERDEMAIN, or SLIGHT OF HAND. Tricks, which, from the dexterity of the performer, are made to deceive the observer.

LEGION (in the Roman army.) A body of 6000 foot and 300 horse, or less.

LEGUMEN (in Botany.) That species of seed vessel vulgarly termed a pod, as the seed vessel of the pea, vetch, lupine, &c.

LEMMA. A proposition in mathematics, which serves to prepare the way for the demonstration of some theorem.

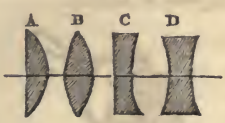
LEMONADE. A drink made of water, lemons, and sugar.

LEMON TREE. A variety of the citron tree, which grows in tropical climates, and yields the fruit that bears the same name.

LEMUR. A genus of quadrupeds somewhat resembling the monkey in the form of

the feet, but widely different from that animal in its manners and temper.

LENS. A piece of glass or other transparent substance of the figure of a lentil, which either collects the rays of light into a point, in their passage through it, or disperses them according to their form and the laws of refraction. The engraving represents the four forms of lenses: double convex, B, which converges light into a focus, which is the centre of the circle, of which the surface of the lens is a part; plano-convex, or convex on one side, A, little used, which converges rays to the opposite side of the circle of convexity; double concave, D, which disperses rays as though they proceeded through the lens from a point on the other side, at the centre of the concavity, and the plano-concave, C, which effects the same as from the distance of the diameter of concavity. The axis of a lens is the line which passes through its centre. See CONCAVE LENS.



LENT. A time of fasting and abstinence for forty days before Easter.

LENTIL, or ERVUM LENS, L. A useful exotic vegetable of the pulse kind, used as fodder for cattle. It is propagated from seeds, which are either sown in the proportion of from one bushel and a half to two bushels broad-cast, or are drilled in rows one foot and a half apart, in order that the intermediate soil may be properly cleaned with the Dutch hoe. Sometimes, however, this vegetable is put in the ground together with oats or barley, at the rate of one bushel of the latter to two bushels of the former.

LEO (in Astronomy.) A constellation, and the fifth sign of the zodiac, marked thus, ♌ containing ninety-five stars.

LEOPARD. A beast of the feline kind, that is all over covered with spots or streaks, and is supposed to be born of a panther and a lioness. It is chiefly found in Senegal. Its habits are those of the cat and the tiger, but it is not so fierce as the latter.

LEPIDOPTERA. An order of insects in the Linnæan system, which have their wings imbricated with scales, as the butterfly, moth, &c.

LEPROSY (in Medicine.) A foul cutaneous disease, appearing in dry, white, thin scurfy scabs.

LEPUS (in Astronomy.) The Hare, a constellation in the southern hemisphere.

LE ROY LE VEUT, i. e. The king wills it. The form of words by which the king of England signifies his assent to the bills that have passed the two houses, after which they acquire the force of laws.

LE ROY S'AVISERA, i. e. The king will consider of it. The form of words by which the king of England refuses his assent to any bills that are presented to him.

LETHARGY. A disease arising from cold, phlegmatic humours, which oppress the brain, and cause an incessant drowsiness.

LETHE. A river in hell, which, according to the poets, caused all who drank of it to forget the past.

LETTER (in Grammar.) A character in the alphabet, used to express the simple sounds of the voice, which in every language are collected into a series called the alphabet. Letters are composed of vowels and consonants, and form words.

LETTER (in Printing.) The type or character which is used in composing.

LETTER (in Commerce.) Any writing sent from one person to another.

LETTER OF ADVICE. A letter written by a merchant to his correspondent, advising or giving him notice of what bills he has drawn upon him.

LETTER OF ATTORNEY (in Law.) A writing whereby a person constitutes another to do a lawful act in his stead, as to receive debts, &c.

LETTER OF CREDIT (among Merchants.) A writing by one merchant to another, desiring him to credit the bearer with a certain sum of money.

LETTER OF MARQUE. An extraordinary commission, granted by government to merchants or others in the time of war, to make reprisals on the enemy.

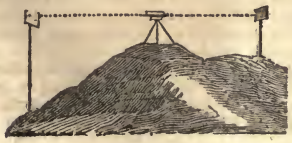
LETTUCE. A garden herb much used as a salad.

LEUCITE. A stone of the garnet kind.

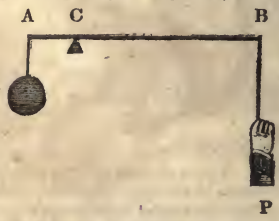
LEVEE. A company who assemble to pay their respects to the head of a government. It consists of gentlemen only, by which it is distinguished from a drawing room, where ladies as well as gentlemen attend.

LEVEL. An instrument used to make a line parallel to the horizon. The plumb level is that which shows the horizontal line by means of another line perpendicular to that described by a plummet or pendulum, which instrument consists of two legs or branches, joined together at right angles, whereof that which carries the thread and plummet is about a foot and a half long; the thread is hung towards the top of the branch. A telescope is placed on the horizontal branch of the instrument, having a hair placed horizontally across the focus of the object glass, which determines the point of the level. The telescope is fastened by a ball and socket.

LEVELLING. The art of finding a line parallel to the horizon at one or more stations, in order to determine the height of one place in respect to another. The subjoined figure shows the manner of finding the difference of the level of a place, where there is a level line and two sights level with each other, whereby the perpendicular distance between the surface of the ground and any point in the level line may be discovered. The art of levelling is particularly applied to the laying out grounds even, regulating descents, draining morasses, conducting water, &c.



LEVER. One of the six powers, which may consist of any instrument, as a straight bar of iron or wood, as, A B, supported upon a fulcrum or prop, C, having a weight, W, at one end, a power, P, at the other. Then A C and B C are the arms of the lever. Of this kind are balances, scales, pincers, &c.



LEVERET. A young hare.

LEVIGATION. The mechanical process of grinding the parts of bodies to a fine paste, by rubbing the flat face of a stone, called a muller, upon another stone, called the table or slab.

LEXICOGRAPHY. The art of writing dictionaries.

LEYDEN PHIAL, or LEYDEN JAR. So called from M. Vankleigh, of Leyden, who first observed its properties. A glass jar, having the outside and the inside coated with tin foil, and a brass wire, the upper part of which terminates in a ball of the same metal, and the lower part in a chain that communicates with the inside. This jar admits of being charged so as to produce the electrical shock, and various other experiments illustrative of the power of electricity.

LIBATION. A sacrifice among the Greeks and Romans, which consisted in offering up some liquid to the gods.

LIBEL (in Law.) An injurious reproach or accusation written or published against the government, a magistrate, or a private person.

LIBEL (in the Civil Law.) The declaration or charge drawn up in writing, as is used in the ecclesiastical courts.

LIBERTY OF CONSCIENCE. The liberty of following any profession of religion which one pleases, without any control from government.

LIBRA (in Astronomy.) A constellation,

and the seventh sign of the zodiac, marked thus, (♎) containing fifty-one stars.

LIBRARIAN. One who has charge of a library.

LIBRARY. A large collection of books; also, the place which contains them. The first library spoken of in history was that formed by Pisistratus, tyrant of Athens. Eumenes, king of Pergamus, also formed a library of 200,000 volumes; but the library of Alexandria, formed by Ptolemy Philadelphus, contained 700,000. Among the libraries of the moderns, that of the Bodleian, at Oxford, holds the first rank.

LIBRATION (in Mechanics.) The swinging motion of a pendulum.

LIBRATION OF THE MOON (in Astronomy.) An apparent irregularity in her motion.

LIBRATION OF THE EARTH. That motion of the earth by which it always retains the parallelism of its axis in its orbit round the sun.

LICHENS. The vegetable crusts which grow on rocks, trees, &c.

LIEUTENANT (in Law.) One who supplies the place of another; sometimes the representative of a king in the government of a distant province.

LIEUTENANT (in Military and Naval Affairs.) The officer next in rank and power to a captain; also, one who commands in the absence of his superior officer, as the lieutenant-general, the officer next to the general, who in battle commands one of the wings, in a march a detachment, at a siege a quarter, when it is his day of duty; so likewise the lieutenant-general of the artillery, the lieutenant-colonel, &c. Lieutenants in ships of war are next in rank to the captain.

LIFE ANNUITIES. Annual payments depending on the life of another.

LIFE BOAT. A particular kind of boat used on sea coasts, to preserve persons from the wrecks of vessels.

LIFE ESTATES. Estates not of inheritance.

LIGAMENTS. Substances in an animal body, between a cartilage and a membrane, harder than the latter and softer than the former, which serve to strengthen the juncture, particularly of the bones.

LIGATURE (in Surgery.) The disposing of bandages for closing wounds.

LIGATURE (among Printers.) Type consisting of two or more letters in one piece, as, ff, ffi, &c.

LIGHT (in Optics.) The cause of those sensations and colours which we refer to the eyes, or sense of seeing, as their source. The essence of light is unknown: whether it consists of emanations from the substance of the luminous body, or is propagated, by impulse, through the medium of a universally diffused and subtile ether, has not yet been determined. The knowledge of the laws which regulate the phenomena of light constitutes the science of optics; the investigation of its action upon the structure of bodies belongs to chymistry.

LIGHT (in Painting.) That part of a piece which is illumined.

LIGHTER. A vessel for carrying goods to or from ships.

LIGHTERAGE. Money paid for the carrying goods in a lighter.

LIGHTHOUSE. A tower or lofty building on the seacoast, having a light in it, for the guidance of mariners at night. It is mostly erected upon a cape or promontory, or upon some rock in the sea, and is furnished with several lamps, for the purpose of giving a great light that may be seen at a distance, and prevent the mariners from running ashore or steering a wrong course.

LIGHTNING. A flash of light issuing from the clouds, that accompanies thunder. It is now universally allowed, that lightning is really an electrical explosion or phenomenon. Philosophers had not proceeded far in their experiments and inquiries on this subject, before they perceived the obvious analogy between lightning and electricity, and they produced many arguments to evince their similarity. But the method of proving this hypothesis was first proposed by Dr. Franklin, who, in the year 1749, conceived the practicability of drawing lightning from the clouds. He proved, by a variety of experiments, that the lightning spark of electricity, and the lightning that flashes from the clouds in a thunder storm, are exactly of the same kind, and operate in the same manner, &c. The particulars in which the lightning, and the electric fluid agree, are, 1. Flashes of lightning are generally seen crooked, and waving in the air, so also the electric spark when it is drawn from an irregular body at some distance. 2. Lightning strikes the highest and most pointed objects in its way, in preference to others; as high hills, and trees, towers, spires, masts of ships, points of spears, and the like. In like manner, all pointed conductors receive or throw off the electric fluid more readily than those that are terminated by flat surfaces. 3. Lightning is

observed to take the readiest and best conductor. So does electricity in the discharge of the Leyden phial. For this reason Dr. Franklin supposes, that it would be safer, during a thunder storm, to have one's clothes wet than dry, as the lightning might then, in a great measure, be transmitted to the ground, by the water on the outside of the body. It is found, he says, that a wet rat cannot be killed by the explosion of the electrical bottle, but that a dry rat may. 4. Lightning causes combustion, so does electricity. Dr. Franklin says that he could kindle with it hard dry resin, spirits unwarmed, and even wood. 5. Lightning sometimes dissolves metals; so does electricity. 6. Lightning has often been known to strike people blind. And a pigeon, after a violent shock of electricity, by which Dr. Franklin intended to have killed it, was observed to have been struck blind. 7. Lightning destroys animal life. Animals have likewise been killed by the shock of electricity. The largest animals which Dr. Franklin and his friends have been able to kill, were a hen, and a turkey which weighed about ten pounds. Thunder is merely the noise produced by the motion of lightning. The reason why we do not have the dreadful noise of thunder, as soon as we see the lightning, is because sound is longer arriving to our ears, than light to our sight. Light moves almost instantaneously. Sound moves no more than 1142 feet in a second.

LIGNUM VITÆ. A hard wood, the produce of a West Indian tree.

LILAC. A tree of the syringa tribe, which bears a pretty flower early in the spring. The flower is either white or light purple.

LILY. A plant with a bulbous and perennial root, the flower of which is six petalled and campanulated.

LIMB. A jointed or articulated part of an animal body.

LIMB (in Astronomy.) The utmost edge or border of the body of the sun or moon.

LIMB (in Mathematics.) The utmost edge or border of an instrument.

LIME (in Botany.) A tree of the orange kind, that grows in warm climates, bearing a fruit similar to a lemon, the juice of which is a strong acid.

LIME (in Mineralogy.) An earthy substance, which is found purest in limestone, marble, and chalk, and is procured by burning in a white heat. It is of a white colour, and easily reduced to a powder. If water be poured on newly burnt lime, it swells and falls to a powder, in which state it is called slaked lime.

LIME KILNS. Furnaces in which limestone is converted into lime by burning.

LIMESTONE. The native carbonate of lime, which is generally rather blue, from the presence of iron.

LIMIT (in Mathematics.) A determinate quantity, to which a variable one continually approaches.

LIMITATION (in Law.) A certain time prescribed by statute, within which an action must be brought.

LIMNING. The art of painting in water colours.

LINCH PIN, or LINS PIN. An iron pin that keeps the wheel on the axle-tree.

LINE (in Geometry.) A quantity extended in length only. Lines are either curves or right lines.

LINE (in Fortification.) Whatever is drawn on the ground or the field, as a trench, or a row of gabions, &c.

LINE (in Military Affairs.) Regular troops, in distinction from the militia, volunteers, &c.

LINE, or a SHIP OF THE LINE (in Naval Affairs.) A vessel of war mounting sixty-four, or more guns.

LINE (in Geography.) Another name for the equator, or equinoctial line.

LINE OF BATTLE. The disposition of an army for battle.

LINEN. A kind of cloth made of flax.

LING. A sort of cod fish.

LINNÆAN SYSTEM. A system of natural history, so called from Sir Charles Linné, the Swedish naturalist. It comprehends a scientific arrangement of all natural objects, as animals, plants, and minerals, into three kingdoms, subdivided into classes, orders, genera, species, and varieties, with a description of their generic and specific characters.

LINNET. A small singing bird, of the finch kind.

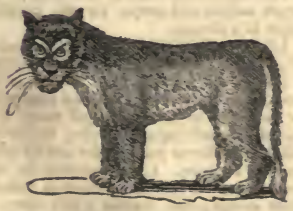
LINSEED. The seed of the flax plant, which yields much oil by pressure, and when purified forms the very best lamp-oil, and abundance of carburetted hydrogen gas for gas lights. It is most used for preparing paints.

LINT. Linen scraped into a soft, woolly substance, fit for applying to wounds.

LINTEL. The upper part of a door or window frame.

LION. The fiercest and noblest of all wild beasts, sometimes called the king of beasts, for his combined activity, strength, and majesty of deportment. Lions are now found only in unfrequented parts of Asia and Africa. They measure about eight feet from the nose to the rump, with a tail about four feet; the colour being a pale brown, and the male, having a bushy mane, which the lioness is without. Their muscular strength is prodigious, and their war and assault terrible; but, when brought up tame, and unused to attack and defence, they allow their keepers to play with them, and are kind to small animals placed in their dens; indeed, as appears by a late atrocious attempt to exhibit a fight between a lion and dogs, the lion by nature proved himself to possess none of that ferocity which appears to be engendered by the intercourse of one animal with another.

LIONESS.



LIQUIDS (in Chymistry.) Fluids which are not elastic, nor diminish sensibly in bulk, in distinction from gases or elastic fluids.

LIQUIDS (in Grammar.) The letters l, m, n, r, so called from their soft and melting sound.

LIQUOR. Any thing liquid that may be drank, particularly what is of a spirituous nature.

LIQUORICE. A shrub, the root of which is full of a sweet juice.

LIST (among Mariners.) An inclination to one side, applied to a ship.

LIST (among Clothiers.) A border or edge of cloth.

LIST, or LISTELL (in Architecture.) A small band or square moulding, serving to crown larger mouldings.

LISTS. A place enclosed with rails, within which tournaments or feats of arms were exhibited.

LITANY. A general supplication or prayer, sung or said in some churches, especially that in the Book of Common Prayer.

LITHARGE. The scum or dross that arises in purifying silver with lead. It is an oxide of lead.

LITHIC ACID. An acid extracted from the urinary calculi.

LITHOGRAPHIC. An epithet for what pertains to engraving on stone, as lithographic impressions, those which are taken on paper from engravings on stone.

LITHOGRAPHY. The art of taking impressions from drawings or writing made on stone. It is a modern invention; and unlike letter-press or copperplate printing, which are altogether mechanical processes, depends entirely upon chymical principles, and has therefore been called in Germany, chymical printing. The principles on which it is founded, first, the quality which a compact granular limestone has of imbibing grease or moisture; and secondly, the decided antipathy of grease and water. A drawing is made on the stone, either with ink or with a crayon of a greasy composition; it is then washed over with water, which sinks in those portions of the stone not touched with the grease of drawing. A cylindrical roller, charged with printing ink, is then passed over the stone; and while the drawing receives the ink, the rest of the stone is preserved from it by the water, on account of the greasy nature of the ink.

LITHOMARGE. An earth of the clay kind, which is known by the name of fuller's earth and potter's clay.

LITHOTOMY (in Surgery.) The operation of removing a calculus or stone from the bladder.

LITMUS (in Chymistry.) A substance from which is formed a tincture that serves as a test of the presence of an acid or an alkali. All acids and salts change the natural violet of the litmus into red, and all alkalies restore it to its natural colour, the violet.

LITURGY. A set form of prayer, or a formulary of public devotion, called by the Romanists the Mass, and in the English church the Common Prayer.

LIVER (in Anatomy.) A very large viscus of a red colour, situated in the right hypochon

drium, and divided into two lobes, which serves for the secretion of the bile.

LIVERY (in Domestic Economy.) A dress of a certain form and colour, which gentlemen require their servants to wear by way of distinction.

LIVERY, or LIVERY OF SEISIN (in Law.) Is a delivery of possession of lands, tenements, or other corporeal things.

LIVERYMEN. A certain number of persons chosen from among the freemen of each company in the city of London. Out of this body are chosen the common council, sheriff, and other superior officers of the city, and they alone have the privilege of voting at the election of members of parliament.

LIVERY STABLES. Public stables, where horses are let out to hire.

LIVRE. A money of account formerly used in France, equal to 19 cents.

LIXIVIUM. A lye made of ashes.

LIZARD. An extensive tribe of animals, classed by Linnæus under the genus lacerta, comprehending the crocodile, basilisk, chameleon, and salamander. The lizard, properly so called, is a little reptile of a green colour, and is frequently to be met with in gardens or under dunghills, &c.

LLAMA (in Natural History.) An animal of the camel kind in Peru and Chili, which has a bunch on the breast, long, soft hair, and a neighing voice.

LL. D. i. e. Legum Doctor, or Doctor of the Civil and Canon Laws.

LOAD (among Miners.) A vein of ore, the leading vein of a mine.

LOADSTONE. A sort of ore dug out of iron mines, on which the needle of the mariner's compass is touched, to give it a direction north or south. It is a peculiarly rich ore of iron, found in large masses in England, and most other places where there are mines of that metal. It is of a deep iron gray, and when fresh broken, it is often tinged with a brownish or reddish colour.

LOAF (among Sugar-bakers.) A lump of sugar of a conical form.

LOAM, or LOME. A particular kind of fat, unctuous, and tenacious earth, that is used much by gardeners in making compost.

LOAN. In general, any thing intrusted to another to be returned again; particularly money.

LOAN (in Political Economy.) Sums of money borrowed from individuals or public bodies for the service of the state. In England this has been carried to a frightful extent, and the debt amounts to a larger sum than could be paid by all the money in existence; certain heavy taxes, called the consolidated fund, being appropriated to pay an annual interest, nominally about 3 per cent., and which amounts to above 30 millions.

LOBBY (in Architecture.) A kind of passage room, or gallery, as the lobby in a theatre.

LOBBY (in Naval Architecture.) A small room near the bread room in a vessel of war, appropriated to the use of the surgeon.

LOBE (in Anatomy.) A division in any body, as the lungs or liver.

LOBE (in Botany.) A division in seeds, such as beans, peas, &c.

LOBSTER. A small crustaceous fish, having a cylindrical body, with a long tail and long antennæ. Lobsters are found on most rocky coasts. Their eggs are hatched in the sands, and 12,444 have been counted under the tail of one animal.

LOCAL COLOURS (in Painting.) Such as are natural and proper for each particular object in a picture.

LOCAL PROBLEM (in Mathematics.) That which admits of innumerable solutions.

LOCK (among Smiths.) A piece of iron work, which is looked upon as a masterpiece in smithery, as much art and nicety is required in contriving and varying the springs, bolts, and different parts, to the uses for which they are intended. Locks intended for outer doors are called stock-locks, those on chamber doors spring-locks, besides which there are padlocks, trunk-locks, &c. The principle on which all locks depend is the application of a lever, that is, the key, to an interior bolt, by means of a communication from without; and the security of locks depends upon the impediments which may be interposed betwixt this lever and the bolt. These impediments have commonly been produced by means of

the wards of the key so artfully contrived as to preclude the access of all other instruments besides the key to the bolt. As these contrivances have not, however, been always an effectual bar, Mr. Bramah, of Europe, has constructed a lock on such a principle that the office which in other locks is performed by the extreme point of the key is here assigned to a lever, which cannot approach the bolt until every part of the lock has undergone a change of position.

LOCK, or WEIR (in Inland Navigation.) A name for all works of wood or stone which are made to confine or raise the water of a river or canal. In artificial navigation, the lock consists of two gates, the upper one called the sluice gate, and the under one the flood gate.

LOCK (among Gunsmiths.) That part of a musket by which fire is produced for the discharge of the piece.

LOCKED JAW. A spasmodic affection of the jaws.

LOCKET. A little lock of a gold chain; also a spring or catch to fasten a necklace.

LOCOMOTION. The power possessed by animals of changing their place, or moving from one place to another.

LOCOMOTIVE STEAM ENGINE. The engraving represents one of these engines as used at the collieries in the northern counties of England. G represents the boiler, and FF the pistons, which alternately work up and down a frame, to which the rods, A and B, are fixed, which turns two small wheels at bottom, and revolve with force the wheel C, which again revolves the outer wheel, and this works in iron teeth fixed in the ground, by which the machine is propelled. The other wheels run on an interior smooth iron rail, and are adapted to support the carriage; the chain in the rear drags wagons or other carriages; the front chimney carries off the smoke, and the centre one the steam from the pistons. The other side is exactly like it, the frame, A and B, working the rods on each side Engines of this kind appear likely to become very general.

LOCUM TENENS. A deputy, or one acting in the place of another.

LOCUS GEOMETRICUS. A line by which a local or indeterminate problem is solved.

LOCUST. A voracious insect, like the grasshopper, which in some parts, particularly in Africa, fall like a cloud upon the country, and lay waste all before them. They are no less terrible dead than alive, for their putrified carcasses cause a pestilence where they happen to alight.

LODGE. A cottage at a park gate.

LODGEMENT (in Fortification.) A work raised by way of shelter for the besiegers; also, a place of defence raised by the besiegers, when in an attack they have gained possession of a post.

LOG (among Mariners.) A flat piece of wood, with lead at one end and a line at the other, for measuring the rate of a ship's sailing.

LOGARITHMS. Numbers so contrived and adapted to other numbers, that the sums and differences of the former shall correspond to and show the products and quotients of the latter, or more properly a series of numbers in arithmetical progression answering to another series in geometrical progression, thus,

0, 1, 2, 3, 4, 5, &c. Indices or Logarithms.
1, 2, 4, 8, 16, 32, &c. Geomet. Progression.
Or,
0, 1, 2, 3, 4, 5, &c. Indices or Logs.
1, 3, 9, 27, 81, 243, &c. Geomet. Prog.
Or,
0, 1, 2, 3, 4, &c. Indices or Log.
1, 10, 100, 1000, 10,000, &c. Geom. Prog.

Where it is evident that the same numbers in arithmetical progression, which are the logarithms or indices, serve equally for any geometrical series, consequently there may be an endless variety of systems of logarithms to the same common numbers, by only changing the second term, 2, 3, 10, &c. of the geometrical series. If any two indices be added together, their sum will be equal to the product of the two terms in geometrical progression with which those indices correspond, thus, 2 and 3 added together are equal to 5, and the numbers 4 and 8, corresponding with those indices, being multiplied together are equal to 32, which is the number answering to the index 5. So if any index be subtracted from another, the difference will be the index of that

number, which is equal to the quotient of the two terms to which those indices belong, thus the index 6—4=2, then 64 divided by 16, the terms corresponding to these two indices leaves the quotient 4, which answers to the index 2. Logarithms being the exponents of ratios are on that account called indices, thus the logarithm 2 is the exponent or index of the several numbers in the geometrical series over which it stands, as 2^2, or the square of 2 equal to 4 in the first series, 3^2 or square of 3, that is 9, in the second series, and 10^2 or the square of 10, that is 100, in the third series; so likewise 3 is the index or exponent for the cube numbers 8, 27, 1000, &c. over which it stands.

LOG-BOARD. A table on which an account of the ship's way is marked.

LOG-BOOK. The book in which the account of the log and of the ship's course are kept.

LOGIC. The useful science which analyzes the art of thinking, and teaches the practice of reasoning, the terms and classifications in which are essential to every finished writer. Its first step is to develope the faculties of the mind—the next to consider propositions and arrangements—the third to illustrate syllogisms and their forms, by which from two terms, a major and minor, a just conclusion is drawn—the fourth to detect error by sophistry—and the last is method and arrangement.

LOG-LINE. The line fastened to the log, which is divided into certain spaces fifty feet in length, by knots or pieces of knotted twine, unreeved between the strands of the line, which show, by means of a half-minute glass, how many of these spaces or knots are run out in half a minute, and as the distance of the knots bears the same proportion to a mile that half a minute does to an hour, whatever number of knots the ship runs in half a minute, the same number of miles she runs in an hour.

LOGOGRAPHY. A method of printing in which the types form whole words instead of letters. By this method the memory of the compositor is less burdened, and the business proceeds with more expedition and less liability to err. It is, however, but little used.

LOGWOOD. A sort of wood used by dyers, called also Campeche wood, because it was originally brought from Campechy, in New Spain. Logwood is very dense and firm in its texture, exceedingly heavy, so as to sink in water, of a deep red colour, and admits of a fine polish. It yields its colour both to spirituous and watery menstrua, but alcohol extracts it more readily than water. Acids turn its dye to a yellow, alkalies deepen its colour, and give it a purple or violet hue.

LOMENTACÆ (in Botany.) The name of the thirty-third natural order in Linnæus' Fragments, consisting of plants many of which furnish beautiful dyes, and the pericarpium of which is always a pod containing seeds that are carinaceous, or mealy, like those of the bean, as the cassia, the wild senna, logwood, mimosa, or the sensitive plant, &c.

LONDON PRIDE. A plant bearing a small flower.

LONG (in Music.) A note equal to two breves.

LONG-BOAT (among Mariners.) The strongest and longest boat belonging to a vessel of war.

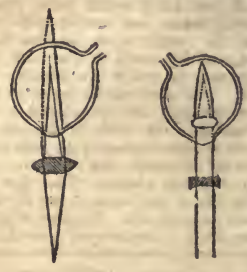
LONGIMETRY. The art of measuring the distance of objects by means of a triangle. and trigonometry. A base line is measured, and the angle which the object makes with the base is taken with a theodolite at each end of the base, and we thus have one side of a triangle, and its angles to determine the other sides.

LONGITUDE (in Astronomy.) An arc of the ecliptic intercepted between the beginning of Aries and the point of the ecliptic cut by the circle of longitude belonging to any star.

LONGITUDE (in Geography.) The extent of the earth from east to west.

LONGITUDE OF A PLACE. An arc of the equator intercepted between some given point called the first meridian and the meridian passing through the proposed place. This may be either east or west, according as it is reckoned on the east or west side of the first meridian.

LONG-SIGHT. This is a disease of age, when the eye becomes too flat to converge rays



of light to the distance of the optic nerve; but the light, as is shown in the engraving, arrives at a focus beyond the nerve, and gives a confused picture at the nerve; nevertheless, if the object is carried farther off, the convergency is then perfect, but the object at the increased distance becomes too small to be discerned distinctly, as for reading, &c., and hence, such persons are called long-sighted. The defect is, however, corrected by means of a convex lens, by which the rays are made convergent before they reach the eye, therefore, has less to perform. Fig. 1, explains long-sight, and the use of a convex lens; and fig. 2, short-sight, and the use of a concave lens.

LOOF. A sea term for the after part of a ship's bow.

LOOM (among Weavers.) A frame by which the process of weaving cloth, &c. is performed.

LOOMING. A phrase applied to states of the atmosphere when, by increased refraction, distant objects are elevated above the level of the earth's curvature.

LOOPHOLES (among Mariners.) Holes in the coamings of the hatches of a ship for firing muskets through.

LOOPHOLES (in Fortification.) Little holes in the walls of a castle or fortification, through which arrows were discharged.

LORD (in Law.) Any peer of the English realm; also, a title of honour sometimes given to persons in England by virtue of their office, as the Lord Chancellor, the Lord Chief Justice, the Lord Mayor.

LORD'S DAY. Sunday, the first day of the week, kept by the early Christians to celebrate the day of the week on which our Lord and Saviour Jesus Christ arose from the dead, and still kept by Christians; a day of rest, or substitute for the seventh day of appointed rest.

LORY. A bird of the parrot kind.

LOTE TREE. A kind of tree which from its jagged leaves was called the nettle tree.

LOTION. The washing or cleansing of any medicine with water; also, a wash for the skin.

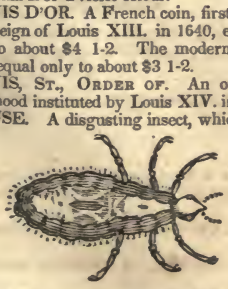
LOTTERY. A game of chance in the nature of a bank, wherein are put tickets for sums of money or other things, called prizes, and others of no value, that are called blanks; these being all mixed together, the tickets are drawn at a venture, and each person has the value of the lot drawn to the number of his ticket. Lotteries are often employed by government as a means of increasing the revenue, but the moral mischiefs were so great, that it is now abandoned in England, and ought to be every where.

LOVE APPLE. The fruit of a tree in Spain, that is of a violet colour.

LOUIS D'OR. A French coin, first struck in the reign of Louis XIII. in 1640, equal in value to about $4 1-2. The modern Louis d'or is equal only to about $3 1-2.

LOUIS, St., Order of. An order of knighthood instituted by Louis XIV. in 1693.

LOUSE. A disgusting insect, which lives



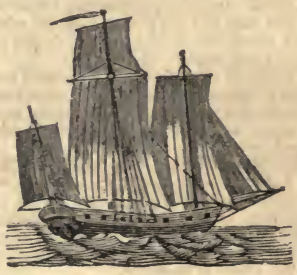
by extracting animal juices; it infests man and brutes. It is remarkable for the transparency of its skin, and is highly curious in its structure.

LOZENGE (in Geometry.) A quadrilateral figure, having two opposite angles acute, and two obtuse.

LOZENGE (in Heraldry.) A figure which is used to contain the coats of arms of all maidens and widows.

L. S. An abbreviation for locus sigilli, the place of the seal.

LUGGER. A small vessel carrying either two or three masts, with a running bowsprit, upon which lugsails are set, and sometimes topsails adapted to them.



LUMBAGO. A rheumatic affection of the muscles about the loins.

LUNACY. A kind of madness, so called because supposed to be influenced by the moon.

LUNAR. Belonging to the moon, as a lunar eclipse, month, year, &c.

LUNATICS. Properly, such as have diseased imaginations, which deprive them of the use of their reasoning faculty, sometimes altogether, and sometimes only on particular subjects.

LUNATION, otherwise called the Synodical Month. A revolution of the moon, or the time between one new moon and another, being 29 days, 12 hours, 44 minutes, 3 seconds, and 11 thirds.

LUNE (in Mathematics.) A geometrical figure in form of a crescent.

LUNGS (in Anatomy.) A viscus in the animal body, composed of two lobes or divisions, which are spongy bodies, situated in

the chest, and serving the purpose of respiration. They constitute the main spring of animal life, fixing part of the gas which they inspire, and deriving from it the heat and energy of the animal. Their action is chymical and galvanic, while that of the heart is purely mechanical.

LUPINE. A sort of pulse, which bears a papilionaceous flower. There are several species of lupines cultivated in gardens, as the white lupine, the small blue lupine, and the great blue lupine, &c. which are all annuals except one species, called by distinction the perennial lupine.

LUPUS (in Astronomy.) The Wolf, a constellation in the southern hemisphere.

LURIDÆ (in Botany.) A natural order of plants in the Linnæan system, which are poisonous, as the nightshade, digitalis, &c.

LUSTRATION. The ceremony of purification performed by the ancient Romans every five years; whence that space was called a lustrum.

LUSTRE (in Mineralogy.) One character of mineral bodies, which in that respect are distinguished into splendent, shining, glistening, glimmering, and dull.

LUTE. A stringed instrument, containing at first only five rows of strings, to which were afterwards added six more. It was formerly much used.

LUTE (in Chymistry.) A compound paste made of potter's clay, sand, and other materials, for the purpose of closing up the necks of retorts, receivers, &c. in different chymical experiments.

LUTHERANISM. The doctrines of Martin Luther, the German reformer, who died in 1546, which form the creed of all the protestants in Germany who are not Calvinists.

LYCOPODIUM, or CLUB MOSS. A sort of moss, the seeds of which when ignited burn off like a flash of lightning.

LYDIAN STONE. A stone of a grayish black colour, which is found in Bohemia and other parts of Germany, and also in Scotland. When polished, it is used as a test stone for determining the purity of gold and silver. It was used for that purpose among the ancients, by whom it received this name, because it was found only in the Tmolus, a river of Lydia.

LYE. Water impregnated with the alkali of wood ashes.

LYMPH (in Anatomy.) A clear limpid humour, secreted from the blood, which is carried by the lymphatic vessels into the thoracic duct, where it mixes with the chyle.

LYMPHATICS. Vessels which absorb the superfluous moisture or lymph in the animal system, and convey it to the chyle.

LYNX. A wild beast, of a tawny brown colour, with black spots, and very quick sighted, which in its habits resembles the wild cat. In Asia they are tamed for hunting, and are proverbial for the keenness of their sight.

LYRA. The Lyre, a constellation in the northern hemisphere.

LYRE. A musical stringed instrument; a kind of harp much used by the ancients.

LYRIC. Pertaining to the harp, as, lyric verse, poetry made for or set to the harp.

M.

M, the twelfth letter of the alphabet, which as a numeral stands for mille, a thousand, and with a stroke over it, thus, $\overline{M}$, it stood for 1,000,000. As an abbreviation M. A. stands for Master of Arts, M. D. Doctor of Medicine, D. Mus. Doctor of Music, MS. Manuscript, MSS. Manuscripts.

MACADAMIZING. A method of making roads, introduced by Mr. Mac Adam, which consists in breaking the stones so small that they may bind with the earth into a solid smooth mass.

MACARONIC POEM. A sort of burlesque poetry.

MACAROON. A sweetmeat made of almonds.

MACAW. An elegant tropical bird, of the parrot tribe.

MACE (in Botany.) A sort of spice, the second coat of the kernel of the nutmeg, a thin membranaceous substance, of an oleaginous nature, a yellow colour, an extremely fragrant aromatic perfume, and a pleasant but acrid and oleaginous taste.

MACE (in State Etiquette.) An ornamented staff, borne as an ensign of honour before a magistrate.

MACERATION (in Pharmacy.) An infusion of ingredients in any liquid, in order to soften them.

MACHINE. An engine composed of several parts, put together by mechanical art and contrivance, for the purpose of raising bodies, assisting, regulating, or stopping their motions, &c. Simple machines comprehend the six mechanical powers. Compound machines are composed of the simple. Machines are likewise distinguished, according to the purpose for which they are used, into the architectural machine, electrical machine, hydraulic machine, &c.

MACHINE, INFERNAL. A machine used in modern warfare, for the purpose of blowing up bridges, &c.

MACKAREL. A well known prolific fish, frequenting the European and American seas in the summer season, in vast shoals.

MACULÆ (in Astronomy.) Dark spots appearing on the luminous surfaces of the sun and moon, and even some of the planets. They were first discovered by Galileo, soon after he had invented his telescope. It has been supposed that these spots adhere to, or float upon the surface of the sun, because, 1. Many of them are observed to break near the middle of the sun's disc, others to decay and vanish there, or at some distance from his limb. 2. Their apparent velocities are always greatest over the middle of the disc, and gradually slower from thence on each side towards the limb. 3. The shape of the spots varies according to their position on the several parts of the disc; those which are round and broad in the middle grow oblong and slender as they approach the limb, as they ought by the rules of optics. By means of these spots the diurnal revolutions of the sun and planets have been discovered.

MACULÆ (in Medicine.) Discolorations on the surface of the body.

MADDER. A substance used in dyeing, which is extracted from the root of a plant botanically distinguished by the name of rubia. The madder root grows in France and other countries of Europe; that of Zealand is the best of European growth, but that which comes from the Levant is still more esteemed.

MADEIRA. A rich wine made in the island of Madeira.

MADRIGAL. A short amorous poem.

MAELSTROOM. A dreadful whirlpool on the coast of Norway; the noise created by the commotion of the water can be heard at a great distance, and is so violent that at certain times of the tide, every thing which comes near the whirlpool is drawn in and dashed to pieces.

MAGAZINE (in Commerce.) A warehouse for all sorts of merchandise.

MAGAZINE (in Military Affairs.) A storehouse for arms, &c.

MAGAZINE (in Literature.) A periodical work, containing miscellaneous matter.

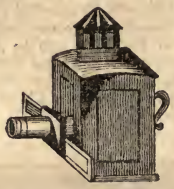
MAGGOT. The larva of flies, bees, &c.

MAGI. Astrologers and priests among the Persians and Asiatics, who worshipped fire, as an emanation of the Deity.

MAGIC. The black art, or the pretended art of producing supernatural effects, derived from the Persian magi.

MAGIC LANTERN. An optical machine, by means of which are represented on an opposite wall in a dark room monstrous figures, magnified to any size at pleasure. This contrivance consists of a common lantern with a candle in it, as in the subjoined figure, to which is added a tube, and a lens that throws the light on the object, and another lens which

magnifies the image on the wall. Then by contracting the tube, and bringing the glass nearer to the object, the image will be enlarged.



MAGIC SQUARE (in Arithmetic.) Figures so disposed into parallel and equal ranks as that the sums of each row, as well diagonally as laterally, shall be equal.

4	9	2
3	5	7
8	1	6

MAGNA CHARTA. The great charter of the laws and liberties of England, bounding the powers of the sovereign, and defining some rights of the people. It was first granted by King John, in the seventeenth year of his reign, A. D. 1215. This was afterwards renewed, with some alterations, by his son and successor, Henry III., and repeatedly confirmed both by this king and King Edward I. The Magna Charta which is the first statute given in the English statute books, is the same as that granted by Henry III. in the ninth year of his reign.

MAGNESIA. A white, soft powder, and one of the primitive earths, having a metallic basis called magnesium. It is mostly extracted from talc, asbestos, boracite, and other stones.

MAGNESIUM. See MANGANESE.

MAGNET. See LOADSTONE.

MAGNETICAL MERIDIAN. A great circle in the heavens, which intersects the horizon in the points to which the magnetical needle, when at rest, directs itself.

MAGNETIC NEEDLE. See NEEDLE.

MAGNETISM. The property of attracting and repelling iron, as the loadstone does, which was partially known to the ancients, but it does not appear that they knew any thing of its directive power, which has been so usefully employed by the moderns. The natural magnet has the power of communicating its properties to iron or steel, which then becomes a magnet itself, and is employed as such on most occasions. The engraving represents the curved forms in which particles of steel dust range themselves when sifted on paper laid over a magnet.

MAGNETISM, ANIMAL. A pretended science, which professed to cure diseases, particularly nervous disorders, by communicating a sort of magnetical fluid or virtue from one body to another.

MAGNIFYING (in Philosophy.) The making objects appear larger by the means of glasses than they do to the naked eye; convex glasses, which have this power, are called magnifying glasses, of which microscopes are made.

MAGNITUDE. The extension of any thing, whether it be in one direction, as a line; in two directions, as a surface; or in three directions, as a solid.

MAGNOLIA. A plant, of which the magnolia grandiflora, or the great magnolia, is the principal species. It is a native of Florida, and bears a beautiful milkwhite flower.

MAGPIE. A variegated crafty bird of the crow kind, which resembles the daw, except that the tail is very long, and the breast and part of the wings white. It can be taught to imitate the human voice as well as a parrot. It is a noisy, mischievous, and wily bird.

MAHOGANY (in Botany.) A beautiful wood, belonging to a tree that grows in America and the West Indies, upwards of 60 feet high, and 4 feet in diameter, known by the botanical name of the swetenea mahogani, or the mahogany tree. It has a beautiful deep-green foliage, flowers of a reddish saffron colour, and fruit of an egg form. The wood varies with the soil; that growing on rocks being hard and close, and that on richer lands light and porous.

MAHOMETANS. Believers in the doctrines and divine mission of the impostor

Mahomet, the warrior and prophet of Arabia, whose creed maintains that there is but one God, and that Mahomet is his prophet.

MAIDEN-HAIR. A plant, native of the south of France.

MAJESTY. A title given commonly to kings. It was first used in England in the reign of Henry VIII. instead of highness.

MAIHEM, or MAYHEM. A corporal wound or hurt, by which a man loses the use of any member. It originally applied to such corporal injuries as rendered a man unfit for war.

MAIL. A public mode of carrying letters, pamphlets, and newspapers, with much safety and expedition.

MAINPRIZE (in Law.) Receiving a person into friendly custody who might otherwise be committed to prison, on security given for his forthcoming on a day appointed; a sort of bail.

MAINTENANCE (in Law.) The wrongful upholding another in a cause.

MAJOR (in Military Affairs.) An officer above a captain.

MAJOR-GENERAL. An officer second in rank to a general.

MAJOR OF A BRIGADE. The officer who receives the orders from the major-general.

MAJOR OF A REGIMENT. The officer next to the lieutenant-colonel.

MAJOR, TOWN. The third officer of a garrison.

MAIZE, or INDIAN CORN. A plant cultivated in North and South America, where the seed or fruit of it is much used for food by the inhabitants. It somewhat resembles the sugar cane in appearance.

MALACHITE. A mineral, the green carbonate of copper, found frequently crystallized in long slender needles. It consists of copper, carbonic acid, oxygen, and water.

MALACOLITE. A mineral found in the silver mines in Sweden, and also in Norway, consisting of silica, lime, magnesia, alumina, oxide of iron, &c.

MALADMINISTRATION. Bad management of public affairs, or a misdemeanour in public employments.

MALAPROPOS. Unseasonably, or at an improper time.

MALATES. Salts formed by the union of the malic acid with different bases. The malates of potash, soda, and ammonia, are deliquescent.

MALAY. A native of Sumatra, one of the Isles of Sunda. Sumatra is the largest, being 900 miles long, and 200 broad; a chain of mountains run through it, the highest of which is 13,400 feet in height. Although directly under the equator, the climate is not very hot, the thermometer seldom rising above 85 degrees. Its population is about 4,500,000. The inhabitants of the coast are Malays. Of the interior but little is known; the inhabitants, however, are said to be cannibals. Its exports are rice, pepper, cotton, cassia, coffee, camphor, &c.

MALE FLOWER. A flower that bears stamens only, without pistils.

MALE SCREW. A screw that has the spiral thread on the outside of the cylinder.

MALIC ACID. An acid discovered by Scheele, about the year 1785. It is procured from the juices of many fruits, but particularly from that of apples. It is composed of oxygen, hydrogen, and carbon, and combines with alkalies, earths, and metallic oxides, so as to form malates.

MALLEABILITY. The property of metals of being capable of extension by beating with the hammer, and of being worked into different forms.

MALLOW. An herbaceous plant, most species of which grow wild in the field. The common mallow is an annual; but there are several species which are perennials and biennials. The leaves of the Common Mallow possess a mucilaginous, sweetish taste, and were formerly often used in food, with a view to prevent costiveness. At present, decoctions of this plant are sometimes prescribed in dysenteries and urinary complaints, though it is chiefly employed in emollient cataplasms, clysters, and fomentations.

MALT. Barley steeped in water, fermented and re-dried; which, when ground, with the addition of hot water, forms wort, for making beer.

MALT KILNS. Chambers full of holes in the floor, through which the heat ascends from the furnace below and dries the barley that is laid upon it.

MAMELUKES. The name of a dynasty that reigned in Egypt. They were originally Turkish or Circassian slaves that were trained to arms, and being employed in the highest offices of the state, at length succeeded to the

throne, but were subdued by sultan Selim. They are now a distinct body of soldiers.

MAMMALIA. The first class of animals in the Linnæan system, comprehending such as suckle their young by means of lactiferous teats, and are for the most part quadrupeds.

MAMMOTH. An antediluvian animal, whose remains have been discovered in various countries, and are supposed to be those of an immense species of elephant, now extinct.

MAN. A being consisting of a rational soul and organical body. By some he is defined thus: "He is the head of the animal creation; a being who feels, reflects, thinks, contrives, and acts; who has the power of changing his place upon the earth at pleasure; who possesses the faculty of communicating his thoughts by means of speech, and who has dominion over all other creatures on the face of the earth." The constituent and essential parts of man created by God, are two: body and soul. The one was made out of dust; the other was breathed into him. The varieties of the human species, as arranged by Blumenbach, are five in number: 1. Caucasian variety, which includes the Europeans, (excepting the Laplanders, and the rest of the Finnish race,) the western Asiatics, as far as the river Ob, the Caspian sea, and the Ganges, and the northern Africans. 2. Mongolian variety, which includes the rest of the Asiatics, (excepting the Malays,) the Finnish races of the colder parts of Europe, as the Laplanders, &c., and the tribes of Esquimaux; extending over the northern parts of America from Bhering Straits to the extremity of Greenland. 3. Ethiopian variety, contains the remaining Africans, besides those classed in the first variety. 4. American variety. To this belong all the Americans, except the Esquimaux. 5. Malay variety, includes the inhabitants of Malacca, of the South Sea, Ladrone, Philippine, Molucca, and Sunda Islands. Each variety is distinguished by the colour of the hair, and some striking peculiarities of feature.

MAN. A sea term for a vessel, as a merchantman, that is, a vessel used in transporting merchants' goods; a man-of-war, the largest kind of vessels used in war, sometimes carrying 120 guns and 1000 men.

MANDAMUS (in Law.) A writ granted by the chancellor, or a judge of the supreme court, so called from the first word, Mandamus, we command, commanding corporations and inferior courts, or other persons, to do some particular thing, as to admit any one to an office, and the like.

MANDARIN. A Chinese magistrate.

MANDATE. A judicial command.

MANDIBLE. The jaw of brutes; in Ornithology, the bill of birds.

MANDRAKE. A plant, whose divided root bears some resemblance to the legs and thighs of a man.

MANDRIL, or MANDERIL. A wooden pulley, part of a turner's lathe.

MANEGE. A riding school; also, the art of horsemanship, or the management of both the horse and the rider.

MANEQUIN (in the Fine Arts.) A little statue or model, usually made of wood or wax, and so contrived as to be put into posture at pleasure.

MANGANESE. A mineral which, when pure, is of a grayish white colour, and considerable brilliancy; it has neither taste nor smell, is of the hardness of iron, and very brittle; when reduced to powder it is attracted by the magnet. The ore of manganese is remarkable for its spontaneous inflammation with oil. It is much used by glass makers and potters, and is sometimes called soap of glass.

MANGE. A cutaneous disease incident to horses, dogs, and other domestic animals; it is attended with eruptions and loss of hair.

MANGEL WURZEL. A sort of beet root, that is in the shape of a carrot, but much larger; it is reckoned a good winter fodder for cows, and has been sometimes used in Germany as the food of man in times of scarcity, whence it derives its name, signifying literally root of scarcity.

MANGER. A trough out of which horses eat their corn or dry food.

MANGER (among Mariners.) A place on the deck of a vessel for receiving the sea water.

MANGROVE TREE. A tree of Surinam, which, like the banian tree, sends forth numerous branches, that take root in the earth and form fresh trees, so as to make a wood out of one main stock.

MANICHEES. The followers of a Persian impostor in the third century, who taught that there were two independent principles or gods, one good and one evil.

MANIFEST (in Commerce.) The draught of the cargo of a ship.

MANIFESTO. A public declaration made by a prince, explaining his reasons for going

to war or adopting any hostile measure towards another country.

MANILLE. A large brass ring, like a bracelet, which was given by the Europeans in their traffic for slaves on the African coast.

MANIS. An animal inhabiting India, having no teeth, a body covered above with scales, and a round extensile tongue, with which it catches insects.

MANNA. The food sent from heaven for the support of the Israelites in the wilderness.

MANNA (in Botany.) A sweet juice or gum which flows from many trees and plants in Syria, and also in Calabria, where it exudes from two species of the ash. Its smell is strong, its taste rather nauseously sweet; if exposed on hot coals it swells up, takes fire, and leaves a light coal, which affords a fixed alkali. It is dissolved by water, and affords by distillation water, acid, oil, and ammonia.

MANOMETER, or MANOSCOPE. An instrument for showing the alterations in the rarity and density of the air. It differs from the barometer, in as much as the latter only serves to measure the weight of the atmosphere, but the former the density of the air in which it is found.

MANOR (in Law.) A noble sort of fee anciently granted by the king of England to some baron to dwell upon, and to exercise a jurisdiction greater or less within that circuit: this was in part let out to the lord's tenants, and part was reserved for the use of his family, which latter was called terra dominicalis, or demesne. Some part was left uncultivated, which was called the lord's waste.

MANSION (in Law.) The lord of the manor's chief dwelling house within his fee.

MANSLAUGHTER (in Law.) The killing a man by misadventure without malice prepense.

MANTELETS (in Fortification.) A kind of moveable parapets used in a siege.

MANTIS. A sort of insects, of which there are numerous species, distinguished by the difference and singularity of their shape. The chief species in Europe is the camel cricket, or praying mantis, so called because when sitting it holds up its two fore legs as if in the attitude of prayer. This is a rapacious insect, that attacks other insects with great fierceness.

MANUAL. Pertaining to the hand, as manual operation, an operation performed by the hand.

MANUAL, Sign (in Law.) The signing of a deed or writing under hand and seal.

MANUAL (in Literature.) Any book small enough to be carried in the hand, which contains a compendium of science.

MANUFACTURE. Any commodity made by the hand, or any thing formed from the raw materials or natural productions of a country, as cloths from wool, and cotton or silk goods from the cotton and silk, &c.

MANUFACTURER. One who employs his capital in manufacturing goods.

MANUMISSION (in Law.) The act of enfranchising or setting a slave or bondman free.

MANURE. Whatever serves to enrich the ground and fit it for husbandry purposes, as dung, loam, soap ashes, &c.

MANUSCRIPT, abbreviated MS. or in the plural MSS. A book or copy written with the hand, in opposition to printed copy.

MAP. A plane figure representing the surface of the earth, or any part thereof, together with the several divisions of land and water, and the several countries, towns, and the like. It is called a universal map when it represents the whole surface of the earth, or the two hemispheres, and a particular map when it only represents particular regions or countries. A map is properly a representation of land, as distinguished from a chart, which only represents the sea or seacoast.

MAPLE (in Botany.) A tree of which there are numerous species, classed by Linnæus under the scientific name acer. The acer saccharinum, or sugar maple, in North America, is one of the most remarkable species, from which, by tapping the trees early in the spring, the inhabitants procure a vast quantity of sugar, a tree of an ordinary size yielding in a good season from twenty to thirty gallons of sap.

MARBLE. A calcareous mineral, or carbonate of lime, moderately hard, fermenting with and soluble in acid menstruum, and calcining in a slight fire: as marbles admit of a fine polish, they are used much as ornaments in building. Marble is found in most of the mountainous parts of Europe, of which the

obtained in Italy is the most valuable. Derbyshire, in England, abounds in this article, as also the Isle of Anglesea, where there is a beautiful marble called Verde de Corsica, because it is found likewise in Corsica. Several varieties of beautiful marble are found in different parts of the United States.

MARBLING. The painting any thing with veins and clouds, so as to represent marble.

MARCH (in Chronology.) The third month in the year, which was formerly the first month.

MARCH (in Military Affairs.) The movement of a body of troops from one place to another; or the stepping of a soldier according to a certain form.

MARCH (in Music.) Any piece adapted to a soldier's march.

MARIGOLD. A plant cultivated in gardens, which bears a radiated, discous flower.

MARINE. A general name for the navy of a kingdom or state, comprehending also all that relates to naval affairs, as the building, rigging, arming, equipping, navigating, and employing ships, either for merchandise or war.

MARINE. Belonging to the sea, as marine stores, &c.; also the name of a body of soldiers raised for the sea service.

MARINE REMAINS. The shells of sea fishes and parts of crustaceous and other sea animals found in digging down great depths into the earth, particularly on the tops of mountains, which, as they prove that these places were once covered with water, are evidences of the general deluge.

MARINER. One accustomed to a sea life.

MARINES. Soldiers who serve on board a ship, and trained to fight either by sea or on land.

MARITIME. Bounded by the sea, as a maritime province or country, that is, one bounded by the sea; so likewise maritime countries, such as England or Holland.

MARK, or MARC. A weight used in several states of Europe; in France it is equal to eight ounces: also, a money of account, equal to about 83 cents.

MARKET. A public place and time for selling provisions and other things.

MARL. A sort of fat earth, consisting of a mixture of carbonate of lime and clay, used in agriculture for enriching barren land, and valuable according to the proportion of lime which it contains.

MARMOTTE. A quadruped about the size of the rabbit, which inhabits the higher regions of the Alps and Pyrenees. The woodchuck of North America, is called the Maryland marmotte.

MARQUETRY. A curious kind of inlaid work, composed of several fine, hard pieces of wood, of various colours, fastened in thin slices on the ground, and sometimes enriched with silver, ivory, and other matters.

MARQUIS. A peer in Britain, in rank, between an earl and a duke, and bearing a coronet on state occasions as in the engraving. The title of marquis was first given in the reign of Richard II. The coronet of a marquis has flowers and pyramids with pearls on them intermixed.

MARROW. A fat and oleaginous substance in the bones of animals.

MARS (in Astronomy.) One of the seven primary planets, distinguished by the red colour of his light, and usually marked by this character ♂. It performs its revolution around the sun in 686 days 23 hours 30 minutes and 30 seconds, and its revolution on its axis in 24 hours 40 minutes. This planet is 4444 miles in diameter, and 144 millions of miles distant from the sun.

MARS (in the Heathen Mythology.) The son of Jupiter and Juno, and the god of war, whose common attributes are his helmet, spear, and sword.

MARSHAL. The chief officer of arms in Europe, whose duty it is to regulate combats in the lists. Also, one who regulates rank and order at a feast or any other assembly, directs the order of procession, &c. In the United States, a civil officer in each judicial district, answering to the sheriff of a county.

MARSHAL, or FIELD MARSHAL (in

Military Affairs.) The highest military officer in Europe.

MARSHALLING (in Heraldry.) The disposing of the several coats of arms belonging to distinct families in one and the same escutcheon, together with their ornaments; one branch of the science of heraldry.

MARSHALSEA. A court originally instituted in England, to hear and determine causes between the servants of the king's household and others within the verge of the court, that is, within 12 miles round Whitehall.

MARTEN, or MARTLET. A large kind of weasel, and one of the prettiest of the beasts of prey which is found in America. It has a small head, an agile body, and lively eyes. The fur of the marten is valuable.

MARTEN. A small species of the swallow; a bird of passage, which visits England and the United States in May, and departs in October, and builds its nest under the eaves of houses.

MARTIAL LAW. The law that has to do only with the military of a government. In cases of riots and rebellions, Martial Law is sometimes proclaimed when the civil power is not strong enough to preserve the peace.

MARTINGAL (in the Manege.) A thong of leather attached to a bridle and fastened at the other end to the girts under the belly of the horse, to prevent his raising his head above a certain point.

MARTINGAL. A sea term for a rope extending from the jib boom to the end of the bumkin.

MASCULINE GENDER. The gender of nouns that denote the male sex.

MASH. Bran scalded in hot water and given to a horse or cow, &c. It is prepared by infusing half a peck of ground malt in a sufficient quantity of boiling water, then agitating the liquor, till it acquires a sweet taste, and when lukewarm, administering it to the animal.

MASHING. The mixing of malt and hot water together in brewing.

MASK. A covering for the face.

MASONRY. The art of hewing, cutting, or squaring stones, and fitting them for the use of buildings; also, of joining them together with mortar.

MASONS, FREE, or ACCEPTED MASONS. A fraternity of great antiquity, so called probably because the first founders of that society were persons of that profession. They are bound by an oath of secrecy not to reveal any thing that passes within the society, and the members throughout the whole world are known to each other by certain secret signs. In Spain, Portugal, and Italy, free masonry is proscribed.

MASORITES. The rabbies who, under Esdras the scribe, are supposed to have purged the Hebrew Bible of the errors that crept into it during the Babylonish captivity. They divided the canonical books into twenty-two, and these twenty-two books into chapters, and the chapters into verses.

MASQUE (in Architecture.) Certain pieces of sculpture representing hideous forms, which serve to fill up vacant spaces.

MASQUERADE. An exhibition in which persons wearing masks or vizards, meet together and represent different characters.

MASS (in Ecclesiastical Affairs.) The ritual or service of the Romish church; when the prayers are simply rehearsed, without singing, it is called Low Mass: but when the prayers are sung by choristers, and the service is performed by a deacon and subdeacon, it is called High or Grand Mass. The form of the altar and the dress of the priest are represented in the engraving.

MASSES (in Painting.) The parts of a picture containing great lights and shadows.

MASSICOT. A yellow oxide of lead.

MASS-PRIEST. The name for Romish priests who are kept in chantries or at particular altars, to say so many masses for the souls of the deceased.

MAST. The upright beam or post on the deck of a vessel, to which the yards, sails, &c. are fixed. The mainmast is the largest mast in the ship; the foremast is the next in size, standing near the stem of the ship; the mizenmast, the smallest of the three, stands between the mainmast and the stern; they are supported by an ingenious combination of ropes, adapted to ascend for the purpose of adjusting the sails.

MASTER OF ARMS. In a ship of war, he who has charge of the small arms, and exercises the petty officers, &c.

MASTER OF ARTS. The second honorary degree conferred at colleges.

MASTERS IN CHANCERY. In England, assistants to the Lord Chancellor, of which there are twelve ordinary masters, who sit in court every day during term, taking affidavits and acknowledgments of deeds, &c. To them are referred all interlocutory orders, and computing damages, &c. There are also Masters Extraordinary appointed to act in every county beyond ten miles distant from London. In the United States, the Chancellor appoints, in different sections of the state, as many masters or assistants as he thinks necessary.

MASTICATORY. A medicine that requires to be chewed, to promote the saliva.

MASTICK, or MASTIC. A resinous substance in the form of tears, of a very pale yellow colour, and farinaceous appearance, having little smell and a bitter astringent taste. It exudes mostly from a tree of the turpentine kind, called in botany pistacia lentiscus, which grows in Turkey.

MASTICOT (in Painting.) A yellow colour, prepared from tin.

MASTIFF. A kind of dog with pendulous lips and a robust body.

MATCH (in Gunnery.) A rope slightly twisted and prepared with inflammable ingredients, which will burn for a length of time without going out.

MATER. See ALMA MATER.

MATERIALIST. One who maintains that the soul is material.

MATERIA MEDICA. All that is used in the art of medicine for the prevention or cure of diseases, whether prepared from vegetables, minerals, or animals.

MATHEMATICS. The science which teaches or treats of whatever is capable of being numbered or measured, and is divided into arithmetic, or that branch which has numbers for its object, and geometry, which treats of magnitude. It is also distinguished into Pure Mathematics, which consider quantities abstractedly, and without any relation to matter, and Mixed Mathematics, which treat of the properties of quantity as applied to material or sensible objects, and interwoven with physical considerations, as astronomy, geography, navigation, mechanics, surveying, architecture, &c.

The following list of the writers who have distinguished themselves in the different branches of the mathematical science, will furnish the best historical view of mathematics in general.

B. C.

722 Confucius, the Chinese philosopher.
600 Thales, a Greek astronomer.
Anaximander, an inventor of globes.
500 Cleostratus, an astronomer.
Anaxagoras, a philosopher.
Anaximines, a diallist.
Pythagoras, an astronomer and geometrician.
400 Plato, a geometrician.
Euctemon, an astronomer.
Meton, the inventor of the Metonic cycle.
Hippocrates, a geometrician.
Oenopides, a geometrician.
Zenodorus, a geometrician.
300 Aristotle, a philosopher.
Calippus, an astronomer, and inventor of the Calyppic period.
Dionocrates, an architect.
Theophrastus, a philosopher.
Xenocrates, a philosopher.
Eudoxus, an astronomer and geometrician.
Pytheas, an astronomer.
Archytas, a philosopher.
Aristæus, a geometrician.
Denostratus, a geometrician.
Menechmus, a geometrician.
200 Apollonius, a geometrician, author of the Conic Sections.
Archimedes, a geometrician, and inventor of machines.
Aristarchus, an astronomer.
Erasthones, a mathematician.
Euclid, a geometrician, author of the Elements.
Aratus, an astronomer and poet
Aristillus, an astronomer.
Nicomedes, a geometrician, the inventor of the conchoid.
100 Hipparchus, an astronomer, numbered the stars.
Ctesibius invented water pumps.
Hero invented the clepsydra and a fountain.

A. D.

Cleomedes, a Roman astronomer.
Geminus, an astronomer of Rhodes.
Manilius, astronomer and poet.
Manlius, an astronomer.
Vitruvius, an architect.
Julius Cæsar, the reformer of the calendar.
Sosigenes, an Egyptian astronomer.
Menelaus, a writer on spherical trigonometry.
Possidonius, a mathematician.

A. D.

Theodosius, a writer on spheres.
Jamblichus, a Syrian philosopher.
100 Nicomachus, a Greek mathematician.
Sextus Frontinus, an engineer.
Ptolemy, an Egyptian astronomer, and geographer, author of the Almagist.
Hypsicles, a Greek mathematician.
200 Diophantus, a Greek algebraist.
300 Jamblichus, a Syrian philosopher.
Jappus, a Greek commentator on Apollonius, &c.
Theon, a Greek commentator on Ptolemy, &c.
400 Hypatia, daughter of Theon, a commentator on Diophantus.
Proclus, a Greek commentator on Euclid.
Diocles, a Greek geometrician, discoverer of the cissoid.
Serenus, a Greek geometrician.
500 Marinus, a geometrician of Naples.
Arithemius, an architect.
Eutocius, a Greek geometrician.
Isodorus, an architect.
600 The Venerable Bede, an English monk and philosopher.
700 Almansor the Victorious, an astronomer.
Hero the Younger, a Greek geometrician.
800 Al Maimon the Caliph, an astronomer.
Al Raschid, a Persian astronomer.
Alfragan, an Arabian astronomer.
Albategni, an Arabian astronomer.
900 Pope Silvester II., a mathematician.
1000 Ibn Ionis, an Arabian astronomer.
Geber Ben Alpha, an Arabian commentator on Ptolemy's Almagest.
1100 Alhazen, an Arabian optician and astronomer.
1200 Leonard de Pisa, an Italian, and the first European algebraist.
Nassir Eddin, a Persian astronomer.
Alphonsus, king of Castile, an astronomer, and author of the Alphonsine tables.
John Halifax, or Sacrobosco, an English mathematician.
Jordanus Neomorarius, an arithmetician.
Roger Bacon, an English philosopher.
Campanus, an astronomer.
Vitellio, an optician.
1300 Albano, an Italian mathematician.
Ascoli, an Italian mathematician.
John of Saxony, an astronomer.
1400 Bianchini, an Italian astronomer.
Moschopulus, a modern Greek arithmetician.
Purbach, an astronomer.
Regiomontanus, or Muller, an astronomer of Vienna.
Cardinal Cusa, an astronomer.
Henry, son of John, king of Portugal, the inventor of charts.

A. D.

Ulug Beg, a Persian astronomer.
Lucas de Burgo, or Paccioli, a German algebraist.
Bernard, an Italian astronomer.
Dominic Novera, an Italian astronomer.
1500 Copernicus, a German astronomer, and the reviver of the solar system.
Peter Apian, or Appian, a German astronomer.
Cardan, an Italian algebraist.
Commandine, an Italian commentator on Euclid and other ancient mathematicians.
Ferreus, an Italian mathematician.
Maurolycus, an Italian mathematician.
Nonius, a Portuguese mathematician.
Sturmius, a German arithmetician.
Tartaglia, an Italian algebraist.
Vieta, a French algebraist.
Ferrari, an Italian algebraist.
Stevinus, a Flemish mathematician.
Mercator, a German geographer.
Ramus, a French mathematician.
Recorde, an English algebraist.
Stifelius, a German algebraist.
Ubaldi Guido, an Italian mathematician.
Tycho Brahe, a Danish astronomer.
Lord Bacon, an English philosopher.
Galileo, an Italian philosopher.
Bombelli, an Italian algebraist.
Castelli, an Italian mathematician.
Clavius, a German geometrician.
Digges, an English philosopher.
1600 Briggs, an English arithmetician, the inventor of logarithms.
Des Cartes, a French geometrician and algebraist, discovered the equation of curve lines.
Kepler, a German astronomer, explained the laws of celestial motion.
Napier, a Scotch arithmetician, improved the system of logarithms.
Torricelli, an Italian philosopher and discoverer of the barometer.
Bayer, a German astronomer.
Gassendi, a French astronomer.
Longomontanus, a Danish mathematician.
Harriot, an English algebraist.
Horrox, an English astronomer.
Kircher, a German philosopher.
Oughtred, an English geometrician and arithmetician.
Porta Baptista, the inventor of the camera obscura.
Cavalerius, a Milanese algebraist.
Brouncker, an Irish mathematician.
Fermat, a French arithmetician, wrote on the theory of numbers.
Pascal, a French philosopher, introduced the doctrine of chances.
Wallis, an English mathematician, first treated on the arithmetic of infinite quantities.

A. D.
1600 Bulialdus, a French astronomer.
Deschales, a French geometrician.
Girard, a French algebraist.
J. and D. Gregory, a Scotch family of mathematicians, the first of whom invented a telescope, &c. the second edited Euclid.
Hevelius, a Prussian astronomer.
Horrebow, a Danish astronomer.
Mersenne, a French geometrician.
Riceiolo, an Italian astronomer, geometrician, and chronologist.
Roberval, a French geometrician.
Tacquet, a French mathematician.
Seth Ward, an English geometrician and arithmetician.
John de Witt, a Dutch mathematician.
James Bernoulli, a Swiss mathematician.
Barrow, an English mathematician.
Hooke, an English philosopher, made many discoveries in mechanics.
Huygens, a geometrician, diallist, and horologist, discovered the evolute of curves.
Leibnitz, a German geometrician and arithmetician, wrote on the differential calculus.
L'Hopital, a French mathematician.
Flamstead, an English astronomer.
Oldenburgh, an English mathematician and astronomer.
Boyle, an English philosopher.
Ozanam, a French mathematician.
Pell, an English algebraist.
Schooten, a Dutch mathematician.
Wren, an English architect.
1700 Newton, author of a new system of philosophy.
John Bernouilli, a Swiss mathematician.
Bradley, an English astronomer, discovered the aberration of the stars.
Cotes, an English geometrician.
Taylor, an English arithmetician and optician.
Cassini, D. and J., French astronomers.
Gravesande, a Dutch mathematician.
Keill, a Scotch astronomer.
La Hire, a French geometrician and astronomer.
Saunderson, an English mathematician.
Saurin, a French mathematician.
Wolfius, a German mathematician.
Clairaut, a French mathematician.
Maclaurin, a Scotch algebraist.
De Moivre, a French arithmetician.
Simpson, an English mathematician.
Bellidor, a French engineer.
Bernouilli, N. and D., Swiss philosophers.
La Caille, a French astronomer.
Collins, an English mathematician.
Dollond, an optician.
Maupertius, a French astronomer and geometrician.

A. D.
1700 Meyer, a German astronomer, and author of some tables.
Robins, an English mathematician and engineer.
Simson, a Scotch geometrician, translator and editor of Euclid's Elements.
D'Alembert, a French mathematician.
Euler, a German geometrician and algebraist.
Landen, an English algebraist, author of the Residual Analysis.
Lalande, a French astronomer.
Maskelyne, an English astronomer.
Waring, an English arithmetician.
Bailly, the French historian of astronomy.
Berkeley, an English philosopher.
Boscovitch, an Italian mathematician and philosopher.
Emerson, an English arithmetician and algebraist.
Montucla, a French mathematician, and the historian of mathematics.
Horsley, an English mathematician.

MATINS. The first part of the daily service, particularly in the Romish church.

MATRASS (in Chymistry.) A long straight-necked chymical glass, made for digestion or distillation.

MATRICE. A mould, or whatever gives form to any thing, as in typefounding, the mould or form in which the type or letter is cast.

MATRICE (in Coining.) The piece of steel on which are engraved the figures, arms, &c. with which the coin is to be stamped.

MATRICES (among Dyers.) The first simple colours, as black, white, blue, red, and sallow or root colour.

MATRICULATION. The admitting of any person to be a member of an English university.

MATRIX. The bed or mould of earth, &c. in which any mineral substance is found.

MATRON. An elderly respectable female who is employed as a nurse in hospitals.

MATRON (in Law.) A married woman of experience, who is in certain cases, in England, empannelled upon juries.

MATT. Rope yarn, junk, &c. beaten flat and interwoven to save the yards, &c. from galling.

MATTER (in Philosophy.) Whatever is extended, and capable of making resistance; hence, because all bodies, whether solid or fluid, are extended and do resist, we conclude that they are made up of matter. That it is one and the same thing in all bodies, and that all the variety we observe arises from the various forms and shapes it puts on, seems very probable, from a general observation of nature in the generation and destruction of bodies: thus, water rarefied by heat becomes vapour; a great collection of which forms clouds; these condensed, descend in hail and rain; part of this collected on the earth constitutes

rivers; another part, mixing with the earth, enters into the roots of plants, and expands itself into various species of vegetables. In each vegetable it appears in one shape in the root, another in the stalk, another in the flowers, &c. Hence various bodies proceed; from the oak, houses, ships, &c.; from hemp and flax, we have thread; thence our various kinds of linen; these degenerate into rags, which receive from the mill various forms of paper, &c.

MAUNDY THURSDAY. The Thursday before Good Friday, in which the king is accustomed to give alms to the poor.

MAUSOLEUM. A stately sepulchre built by Artemisia, queen of Caria, for her husband Mausolus; also, any pompous sepulchral monument.

MAXIMUM (in Mathematics.) The greatest quantity attainable in any case.

MAY. The fifth month in the year.

MEAD. An agreeable drink, made of honey and water boiled and fermented. One of the best methods of preparing it is as follows: into twelve gallons of water put the whites of six eggs; mixing these well together, and to the mixture adding twenty pounds of honey. Let the liquor boil an hour, and when boiled add cinnamon, ginger, cloves, mace, and rosemary. As soon as it is cold, put a spoonful of yest to it, and turn it up, keeping the vessel filled as it works; when it has done working, stop it up close, and when fine, bottle it off for use.

MEADOW. In its general signification, pasture or grass lands, annually mown for hay; but it is more particularly applied to lands that are so low, as to be too moist for cattle to graze upon them in winter without spoiling the sward.

MEADOW LARK. A beautiful bird, with a yellow breast, and the wings and back speckled with gray and white. It is found mostly in lowlands, is a good songster, and is about the size of a robin.

MEADOW SWEET. An herb with crumpled leaves, something like those of the elm, growing in meadows. Its flower expands in the form of a rose.

MEAL. The flour of any grain, particularly of maize.

MEAN (in Mathematics.) The middle between two extremes, as a mean motion, mean distance, arithmetical mean, geometrical mean, &c.

MEAN ARITHMETICAL. Half the sum of the extremes.

MEAN GEOMETRICAL, or A MEAN PROPORTIONAL. The square root of the product of the two extremes.

MEAN HARMONICAL. Double a fourth proportional to the sum of the extremes.

MEAN TIME, or EQUAL TIME. That which is measured by an equable motion, as a clock.

MEASLES. A disorder incident to children, consisting of a fever, attended with inflammation, cough, and difficulty of breathing.

MEASURE. Any given quantity by which the quantity, length, breadth, thickness, and capacity of other things may be estimated.

MEASURE (in Geometry.) Any certain quantity assumed as one, or unity, to which the ratio of other similar quantities is expressed; thus, the measure of a line is the extension of a right line at pleasure, which is to be considered as unity, as an inch, a foot, or a yard.

MEASURE (in Arithmetic.) A certain number or quantity, which being repeated a certain number of times, is equal to another that is bigger, to which it has relation, as 6 is the measure of 36.

MEASURE (in Music.) That note, as the semibreve, by which all the other notes are measured or adjusted to its value.

MEASURE (in Poetry.) A certain number of syllables metrically measured.

MEASURE (in Commerce.) Determinate quantities, by which all things that are bought and sold are measured as to their quantity, and estimated as to their rate: these are various in different countries.

MECHANICAL. Pertaining to mechanics.

MECHANICAL AFFECTIONS (among Philosophers.) Such properties of matter or body as arise from its figure, bulk or motion.

MECHANICAL PHILOSOPHY. That which explains the phenomena or appearances of nature from mechanical principles, viz. from the motion, rest, size, figure, &c. of the small particles of matter. This is the same as the corpuscular philosophy.

MECHANICAL POWERS. The six simple machines to which all others, how complex soever, may be reduced, and of the assemblage whereof they are all compounded; these are the simple lever, the wheel and axis, the pulley, the inclined plane, the wedge, and the screw. These six might be reduced to two, for the pulley and wheel are only assemblages of levers, and the wedges and screw are inclined planes.

MECHANICAL SOLUTION OF A PROBLEM (with Mathematicians.) Is a construction or proof not done in a strictly

geometrical manner, but by the help of instruments.

MECHANICS. The science of motion, or that branch of mixed mathematics which treats of the effects of powers or moving forces, and applies them to machines and engines. Newton divides this science into practical and rational; the former of which relates to the mechanical powers, namely, the lever, balance, wheel and axis, pulley, wedge, screw, inclined plane, &c. (see MECHANICAL POWERS;) and the latter, that is, rational mechanics, relates to the theory of motion, showing when the forces and powers are given, how to determine the motion that will result from them; and conversely, when the circumstances of the motion are given, how to trace the forces or powers from which they arise.

As to the practical part of mechanics, this was doubtless one of the first branches of knowledge which necessity would lead men to acquire, it being impossible to pursue any of the mechanic arts successfully, without the aid of mechanical powers in raising weights or exerting forces. That all the mechanical powers were well known to the ancients, is certain, from the number and perfection of the machines which they had in use. The theoretical part of mechanics appears, however, not to have engaged their attention before the time of Archimedes, who particularly applied himself to this subject; and, in his book on Equiponderants, has given us the theory of the lever, the inclined plane, the pulley, and the screw. From his time to the sixteenth century, the theory of the mechanical science remained, with little or no addition or change. Stevinus, a Flemish mathematician, revived the subject by treating on the laws of equilibrium of a body placed on an inclined plane, &c.; and Galileo afterwards, in his treatise on statics, extended his researches on the theory of the inclined plane, the screw, and all the mechanical powers, but more particularly on the theory of accelerated motion. Torricelli, a pupil of Galileo, added several propositions concerning projectiles; Huygens treated of the motion of bodies along given curves; and, in 1661, Huygens, Wallis, and Sir Christopher Wren, all discovered the true laws of percussion, without any previous communication with each other. Henceforth the study of mechanics, like every other branch of the mathematical science, was illustrated and enlarged by different writers of great name; as by Newton, in his Principia; Leibnitz, in his Resistentia Solidorum; Deschales, in his Treatise on Motion; Parent, in his Elements of Mechanics and Physics; Oughtred, in his Mechanical Institutions; Keil, in his Introduction to True Philosophy; De la Hire, in his Mechanique; Ditton, in his Laws of Motion; Gravesande, in his Physics; Euler, in his Tractatus de Motu; Muschenbrock, in his Physics; Bossu, in his Mechaniques; Lagrange, in his Mechanique Analytique; Atwood, in his Treatise on Motion; Gregory, in his Mechanics, Theory, and Practice, &c.

MEDAL. An ancient coin, or a piece of metal in the form of a coin, stamped to preserve the memory of some illustrious person, or of some distinguished event.

MEDALLION. A very large medal, supposed to be anciently struck by the emperors.

MEDICINE. The art of preserving health, curing diseases, and alleviating maladies. It is an art that assists nature in the preservation of health by the use of proper remedies.

MEDIETAS LINGUÆ (in English Law.) A jury consisting of half natives and half foreigners, which is empannelled in cases where the party to be tried is a foreigner.

MEDIUM (in Physics.) That space or region through which a body in motion passes to any point; thus, ether is supposed to be the medium through which the heavenly bodies move; air is the medium through which bodies move near the earth; water the medium wherein fishes live and move.

MEDIUM, ETHEREAL. A subtle medium supposed by Newton to occupy every part of space, in which the planetary motions are performed without resistance, and by means of which light is reflected, inflected, and refracted, heat is propagated and increased, and, in short, all the great operations of nature are supposed to be carried on through the agency of this universal medium.

MEDLAR. The fruit of a tree called, in Botany, the MESPILUS GERMANICA, which in its leaf resembles a laurel. The fruit, which in shape resembles an apple, is not eatable until it is in a state of rotten ripeness.

MEDULLA CEREBRI. The soft substance of the brain, covered externally with a cortical substance of an ashy colour.

MEDULLA OBLONGATA. The beginning of the spinal marrow, or an extended portion of the brain.

MEDUSA (in Mythology.) One of the three Gorgons, said to have been born with snakes on her head instead of locks of hair. Perseus cut off the head of Medusa, and placed it in the shield of Minerva.

MEDUSA. A sort of worms which, causing when touched slight tingling and redness, are denominated sea-nettles.

MEERSHAUM. A fine sort of Turkish clay, of which pipes are made in Germany, of various forms. It assumes a beautiful brown colour after it has been used for smoking for some time.

MELLITE, or HONEY-STONE. A mineral found first in Thuringia, which is of a honey-yellow colour, and is usually crystalized in small octaedrons.

MELLITIC ACID. A substance procured from mellite.

MELODY (in Music.) The agreeable sen-

sation produced by a regular succession of different sounds.

MELOE. A sort of insects, of which the two principal species are the oil beetle, so called because, on being handled, it exudes from its legs drops of a clear, deep yellow oil or fluid, of a very peculiar and penetrating smell; and the meloe vesicatorius, or Spanish fly, which is used in raising blisters.

MELON. A plant of the cucumber tribe, the flower of which consists of one bell-shaped leaf cut into several segments. The fruit is mostly of an oval shape, and filled with seeds.

MEMBRANE (in Anatomy.) A broad, nervous, and fibrous substance, which serves as a covering for different parts of the body, particularly the brain and the viscera.

MEMENTO. A hint to awaken the memory.

MEMOIRS. Histories written by those who have been witnesses of the transactions and acquainted with the persons which they describe.

MEMORANDUM. A short note, for the better remembrance of a thing.

MEMORIAL. A monument, or whatever else serves to call a thing or person to remembrance.

MEMORY, Artificial. A method of assisting the memory by some artificial contrivance, as that of forming certain words, the letters of which shall signify the date or era to be remembered. Various devices of this kind have been hit upon at different times.

MENDICANTS. Monks, so called, who, in Catholic countries, go about begging alms.

MENSTRUUM. A liquid which serves to extract the virtues of any substance by infusion, decoction, &c. Water is the menstruum of all salts, oils of resins, acids of alkalis, and the like.

MENSURATION. The art of measuring lines, superficies, and solids, which, in consequence of its extensive application to the purposes of life, is considered as of the greatest importance.

Euclid treats of mensuration, as far as regards surfaces, only of the measuring of triangles; and in regard to curvilinear figures, he attempted the measurement of the circle and the sphere. Archimedes carried this subject to a much greater extent: he found the area of a parabola to be two thirds of its circumscribing triangle, which, with the exception of the lunules of Hippocrates, was the first instance of the quadrature of a curvilinear space. He likewise determined the ratio of spheroids and conoids to their circumscribing cylinders, and has left us his attempt at the quadrature of the circle. He demonstrated that the area of a circle is equal to the area of a right-angled triangle, of which one of its sides about the right angle is equal to the radius, and the other to the circumference; and thus reduced the quadrature of the circle to the determining the ratio of the circumference to the diameter, a problem, in the solution of which he could only arrive at an approximation to the truth, showing that the ratio between the circumference and the diameter was less than that of 7 to 22. What Archimedes failed to effect in this respect has continued to this day unattainable, notwithstanding the efforts which have been made by subsequent mathematicians, particularly within the last three centuries, to arrive at a greater approximation. As all hopes of accurately squaring the circle and some other curves were at length given up, mathematicians applied themselves to the finding the most convenient series for approximating towards their true lengths and quadratures; and the science of mensuration has in consequence assumed a more consistent form, as may be clearly seen in the treatises of Hawney, Robertson, Hutton, and Bonnycastle.

MEPHITIC. Poisonous, like the Mephitis, or Damp, as it is called by the miners; as Mephitic Air, another name for nitrogen gas, on account of its noxious quality: and Mephitic Acid, carbonic acid, so called because it cannot be respired without causing death.

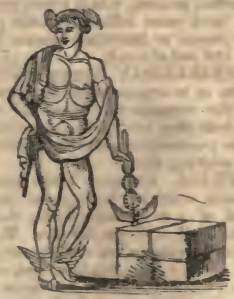
MERCATOR'S CHART. A sea chart, in which the parallels of latitude and the meridians are represented by straight lines.

MERCER. One who deals in wrought silks.

MERCHANT. One who exports the produce of one country, and imports the produce of another.

MERCHANTMAN. A vessel that is employed in carrying merchandise to different countries.

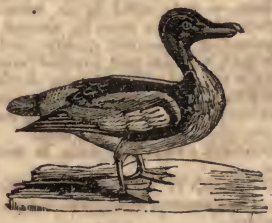
MERCURY (in the Heathen Mythology.) The son of Jupiter and Maia, the god of eloquence and commerce, and the messenger of the gods, whose common attributes are his caduceus, his winged hat, and his talaria, or winged feet.



MERCURY (in Astronomy.) The smallest of the planets, and the nearest the sun, marked by the character ☿. The period of its revolution is 87 days 23 hours 15 minutes and 43 seconds. This planet is 37 millions of miles from the sun, and 3200 miles in diameter.

MERCURY. A mineral or metallic fluid, vulgarly called quicksilver, and distinguished from all other metals by its extreme fusibility, which is such that it does not assume the solid state until cooled to the 39th degree below 0 on Fahrenheit's thermometer, and of course is always fluid in temperate climates. It is volatile, and rises in small portions at the common temperature of the air; it readily combines with gold, silver, lead, tin, bismuth, and zinc, and on that account is usefully employed in the silvering of looking-glasses, making barometers and thermometers, and for the preparation of several powerful medicines, some of which are a deadly poison.

MERGANSER. A water-fowl, which frequents the Hebrides during the winter season, very similar in size and appearance to a goose.



MERIDIAN. A great circle on the terrestrial sphere, passing through the poles of the world and the zenith or vortex of any place, exactly dividing the east from the west. The meridians are as numerous as the places on the earth; and the first meridian is that from which the reckoning commences, which is mostly fixed from the capital of each country.

MESNE PROCESS (in Law.) An intermediate process, which issues pending the suit, upon some collateral matter; also, all such process as intervenes between the beginning and end of a suit.

METALLURGY. The art of working metals, so as to separate them from the ore. It may also comprehend the several operations by which they are rendered available to particular purposes; as, assaying, gilding, refining, smelting, &c.

METALS. Compact bodies generated in the earth, which are heavy, hard, opaque, possessed of a remarkable lustre, fusible, and malleable in different degrees. There were originally reckoned but seven metals, namely, gold, silver, copper, tin, iron, lead, and quicksilver; but this number has since been increased to thirty, some of which have the metallic properties in a small degree. Of the primitive metals, gold is the heaviest; but platinum, one of the newly discovered metals, is found to be still heavier.

METAMORPHOSIS (in Entomology.) The change which insects undergo in passing from one state to another.

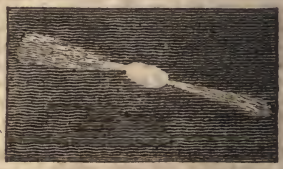
METAPHOR. The application of a word in some other than its ordinary use, on account of some resemblance between the two objects: thus the President is, by a metaphor, said to be the head of the United States, because the head is the chief part of the body.

METAPHYSICS. Abstract philosophy, or the examination of the general causes and relations of existing things.

METEMPSYCHOSIS. The migration or passing of the soul out of one body into that of another, which is said to have been the doctrine maintained by Pythagoras, and is now held by the Brahmins, in India.

METEOR. A general term for all the phenomena of the atmosphere, but particularly for such sudden and luminous appearances as are occasionally visible, such as fireballs, or luminous bodies of considerable magnitude, that are frequently to be seen in the tropical climates. They pass at the height of 50 or 60 miles, with such rapidity as to scan over distances of several hundred miles at the same instant, leave a report behind them, and illumine the entire atmosphere. Their most common appearances are shown in the engravings.

Great Meteor of Nov. 13, 1803, *as seen at Soho Square, Eng.*



Great Meteor of 1803, *as seen at Greenwich, Eng.*

METEORIC STONES. Heavy, stony bodies, that are supposed to fall from the fireballs after they have exploded. These stones, which are looked upon by some as concretions formed in the atmosphere, are by a chymical analysis found to contain silica, oxide of iron, magnesia, sulphur, lime, and oxide of nickel.

METEOROLOGY. The doctrine of meteors in general, or the study of the variable

phenomena of the atmosphere. The changes to which the atmosphere is most subject are such as respect its temperature, weight, moisture, and electricity, which are marked and measured by the barometer, thermometer, hygrometer, and electrometer. The results of these changes are winds, rains, snow, heats, colds, dews, &c. The intensity of the winds is measured by the aerometer, and the quantity of rain is measured by the pluviometer or rain-gauge.

METHODISTS. A sect of physicians who flourished at Rome, and professed to follow the rules of Galen; also, a sect of religionists who, in the seventeenth century, professed to defend the tenets of the Church of Rome against the Protestants; and in modern times, another sect, who profess to act by a rule of their own, as distinguished from the doctrine and discipline of the Episcopal Church. The leaders of this latter sect were Wesley and Whitefield, the followers of whom are divided into two parties, the former professing the doctrines of Arminius, and the latter of Calvin.

METONYMY (in Rhetoric.) A figure of speech whereby one thing is put for another, as the cause for the effect, the part for the whole, and the like.

METRE (in Poetry.) A system of feet composing a verse; as pentameter, a verse of five feet, hexameter, a verse of six feet, &c.

METRE (in Commerce.) A French measure equal to rather more than thirty-nine inches.

METROPOLIS. The chief city of any country.

MEXICAN. A native of Mexico, a country in North America, formerly belonging to Spain, celebrated for its mines of gold and silver. Mexico is thinly inhabited in the interior, and abounds in herds of cattle and wild horses. The climate near the sea coast is hot and sickly, but the interior is cool and healthy. It contains about 1,000,000 square miles, and between nine and ten millions of inhabitants. It is about 1800 miles in length, and averages about 800 in breadth. Mexico is the capital, and has a population of about 150,000. The ancient Mexicans, were the most enlightened of any of the aborigines of North America, and had acquired many of the arts of civilized life.

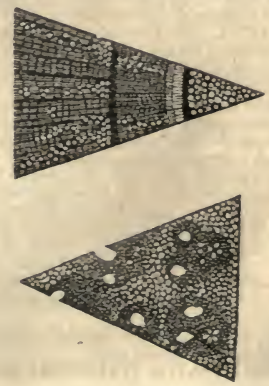
MEZZOTINTO. A particular kind of engraving, so called from its resemblance to drawings in India ink. This is performed by punching the copper plates with the grounding tool, scraping them with the scraper, and then rubbing them with the burnisher or smooth piece of steel, to produce the effect desired.

MIASMA. The noxious effluvia which arises from swamps and putrifying masses.

MICA, or Muscovy Glass. A stone which forms the essential part of many mountains. It consists of a number of thin laminæ adhering to each other. It has long been used as a substitute for glass, particularly in Russia.

MICROMETER. An astronomical machine fitted to a telescope in the focus of the object-glass, for measuring small angles or distances, as the apparent diameters of the planets, &c.

MICROSCOPE. An optical instrument which magnifies objects, so that the smallest may be distinctly seen and described by means of a proper adjustment and combination of lenses or mirrors. Microscope. Single, is one which consists of a single lens. Microscope, Compound, consists of two lenses at least, but generally three, and often more. Microscope, Solar, invented by Dr. Lieburkhun, is employed to represent very small objects on a very large scale, in a dark room. Microscope, Botanica, is a compact instrument, which particularly recommends itself to the practical botanist and naturalist, as a truly able assistant in their researches through the animal, vegetable, and mineral kingdoms, and more especially when its facility of management



and portability, combined with its extent of magnifying powers, are brought into consideration. The invention of microscopes, like many other ingenious discoveries, has been claimed for different authors. Huygens informs us that Drebell, a Dutchman, constructed the first microscope in 1621; but Borelli states, in a letter to his brother, that when he was ambassador in England in 1619, Cornelius Drebell showed him a microscope, which he said was given him by the archduke Albert, and had been made by Jansen, whom he considers to have been the real inventor, although F. Fontana, a Neapolitan, claimed, in 1646, the honour of the invention to himself, and dated it from the year 1618. The engravings represent a section of a tree as viewed through a microscope.

MIDRIFF, or DIAPHRAGM (in Anatomy.) A membrane which divides the trunk of the body into the thorax and abdomen, the upper and lower cavity.

MIDSHIPMAN. A junior officer in the navy, so called from his quarters being in the midships.

MIDSUMMER. The summer solstice. The 24th of June is the Midsummer Day.

MIDWIFERY. The art of assisting women in childbirth.

MILE. A long measure, containing 8 furlongs, or 1760 yards, or 5280 feet.

MILIARY GLANDS. The small and infinitely numerous glands, which secrete the perspiration.

MILITARY. A name for the whole body of soldiery, with their equipments, &c.

MILITARY. An epithet for what belongs to soldiers, as Military Architecture, Military Exercises, &c.

MILITARY ARCHITECTURE. See FORTIFICATION.

MILITARY EXECUTION. Ravaging a country that refuses to pay the contribution levied upon it; also, the punishment inflicted by the sentence of a court-martial.

MILITIA. The body of soldiers enrolled for discipline, but not engaged in actual service except in emergencies.

MILK. A fluid which serves for the nourishment of young animals. It is secreted by particular glands in the female of all animals which suckle their young, which on that account are denominated mammalia. The constituent parts of cows' milk, procured by chymical analysis, are, aroma, an odorous, volatile principle; water, which forms a considerable part; bland oil, from which the cream is formed; curd, or animal gluten; sugar, or the serum of milk; and some neutral salts. Human milk is the thinnest of all, and next to that, asses' milk, which is prescribed for consumptive persons.

MILK-THISTLE. A biennial, the leaves of which are eaten as a salad.

MILKY WAY, or VIA LACTEA (in Astronomy.) A broad track or path encompassing the whole heavens, which is easily discernible, from its milky white appearance, consisting of an extensive shoal of innumerable fixed stars, of which the sun is one, and of which all visible single stars are parts; other visible stars being, in reality, clusters similar to the milky way. Taken lengthwise in direction, our cluster contains 100,000 stars, each distant from the other at least 30 billions of miles, and the entire cluster consists of many millions of stars.

MILK-WORT, the COMMON. An indigenous perennial plant, thriving on heaths and dry pastures; flowering in the months of June and July.

MILL. A machine for grinding corn, &c. of which there are different kinds, according to the different methods of putting them in motion, as watermills, windmills, horsemills, handmills, and also steammills. They are also distinguished according to the uses they serve, as cornmills, cottonmills, papermills, barkmills, &c. Corn is ground by two millstones placed one above the other without touching, the space between them being made greater or less, according as the miller would have the flour finer or coarser.

MILLENNIUM. A thousand years, generally taken for the thousand years of Christ's reign here on earth.

MILLER. An insect whose wings appear as if covered with a white dust or powder, like a miller's clothes.

MILLET. A plant that bears an immense number of small grains.

MILLING. The same as fulling.

MILLING. The stamping of coin by means of a mill. This is one part of the process in coining.

MILLION. The number of ten hundred thousand.

MILLREA. A Portuguese gold coin, equal to one dollar and twenty-five cents.

MIMOSA, or the SENSITIVE PLANT, so called on account of the sensibility of its leaves. It is a numerous tribe of plants, which are all natives of warm climates. They have all the singular property that their leaves recede from the touch and run rapidly together; in some, the footstalks and all are affected. The humble sensitives instantly fall downward, as if fastened by hinges. These plants have all winged leaves, each wing

consisting of many small pinnæ. From the Mimosa Nilotica, represented underneath, is procured the gum arabic.

MINE. A cavity under ground, formed for the purpose of obtaining minerals, often very deep and extensive. The descent into them is by a pit, called a shaft, and the excavations which follow the mineral sought are called the workings. The enemies of miners are fixed or inflammable air, and water; and to ventilate them, and pump out the water, are troublesome operations. There are mines of gold, silver, copper, iron, diamonds, salt, alum, antimony, &c. The clues by which mines are discovered, are mineral waters, the discolouration of vegetables, the appearance of pieces of ore, or metallic sand, or various exhalations from the soil.

MINE (in Fortification.) A subterraneous passage dug under the wall or rampart of a fortification, for the purpose of blowing it up by gunpowder. The place where the powder is lodged is called the chamber.

MINERALOGY. That science which treats of the solid and hard component parts of the earth. Minerals have been variously classed by different writers. The system of Werner comprehends them under the four classes of earths, salts, inflammables, and metals. To this Linnæus has added a fifth class of petrifactions.

MINERAL WATERS. Springs impregnated with mineral substances.

MINERVA. The daughter of Jupiter, and goddess of wisdom and the fine arts. She is commonly represented with all the emblems of war, as the helmet, spear, and shield.

MINERVALIA. Presents among the ancients, made by the boys to their masters before the feast of Minerva.

MINIATURE. A delicate kind of painting, consisting of little points or dots instead of lines, commonly done on ivory, and used in taking portraits; also, the portrait itself.

MINIM (in Music.) A measure of time marked thus, 𝅗𝅥, equal to two crotchets.

MINIMUM (in Mathematics.) The least quantity attainable in a given case.

MINISTER, Foreign. A person sent into a foreign country, to manage the affairs of the state by which he is sent.

MINIUM, or Red Lead. An oxide of lead, procured by exposing this metal to a great heat and a free access of air.

MINOR (in Law.) Any one under the age of twenty-one.

MINORITY (in Law.) A state of nonage; also, the smaller number of persons who give their votes on any question.

MINSTREL. A player on any musical instrument; an itinerant performer.

MINT (in Botany.) A genus of plants, the roots of which are perennial, used for culinary and medicinal purposes. There are 19 species, all of which contain much essential oil, of an aromatic flavour.

MINT (in Law.) The place where money is coined by public authority.

MINUTE (in Geometry,) marked thus (′). The sixtieth part of the degree of a circle; also, the sixtieth part of an hour.

MIRACLES. Works effected in a manner different from the ordinary course of nature, by the immediate power of the Almighty, for some particular purpose.

MIRROR. The surface of any opaque body polished, and adapted to reflect the rays of light which fall upon it, and to represent objects. Mirrors are either flat, as looking-glasses; concave, for the purpose of converg-

ing the rays of light; or convex, for the purpose of diverging the rays of light.

MISADVENTURE (in Law.) A homicide when a man doing a lawful act, without any intention of injury, unfortunately kills another.

MISCELLANEÆ. One of Linnæus' natural orders of plants, comprehending such as were not included in the other orders.

MISCHIEF (in Law.) Damage or injury done to the property of another, not for gain, but with a malicious intent.

MISDEMEANOUR (in Law.) An offence less than felony, as assault, &c.

MISLETOE. A plant which always grows on trees, and was thought therefore to be an excrescence of the tree; but it has been found to be propagated by the seed or berry which is conveyed by the misletoe thrush from one tree to another: this bird being fond of these seeds, it sometimes happens that the viscous part of the berry sticks to his beak, and in his attempts to disengage himself from it by striking his beak against the bark of the tree, the berry sticks to the latter; and if it happen to light on a smooth part, it will take root, and sprout out the next winter. This plant adheres most readily to the ash and other smooth-rinded trees, as the apple, &c.

MISNAH. The code or collection of the civil law of the Jews.

MISNOMER (in Law.) The giving a person a wrong name.

MISSAL. The book of the Romish ceremonies.

MISSILE. Any weapon thrown or discharged from a machine, as stones from a sling.

MISSIONARIES. Ministers sent into any country to preach Christianity.

MISTS. Vapours hovering over the earth, which are either drawn upward by the rays of the sun, or fall down by their own weight in the shape of dew, or, in cold weather, in that of hoar frost.

MITE. One of the smallest insects, that is scarcely visible to the naked eye, except by its motion. As seen through a microscope, it is found to have eight legs, two eyes, one on each side the head, and two jointed tentacula. It mostly lives in cheese.

MITRE (among Carpenters.) An angle just 45 degrees or half a right angle.

MITRE. A sacerdotal ornament worn on the head by bishops on solemn occasions; it is a cap of a conical form.

MNEMONICS. The art of memory; and as memory itself arises from association of ideas, so mnemonics consists in associating things to be remembered, with some set of familiar objects, as the rooms in a house, the streets in a city, or the buildings on a well-known road. About 1740, Mr. Lowe published the art of remembering dates and figures by converting them into syllables, and joining them to their proper words, or parts of them. He used vowels or consonants as they best suited the formation of a syllable:

a	e	i	o	u	au	oi	ei	ou	y		
1	2	3	4	5	6	7	8	9	0	100	1000	1000000
b	d	t	f	l	s	p	k	n	z	g	th	m

Therefore we remember the dates of the following events, and any others, thus:

Deluge	2348	we call	Del. dif'k.
Troy	1184	——	Tro. bako.
Socrates	396	——	Socra. tous.
Alexander	323	——	Alexan. tet.

making as many as we please; and in this way 200 or 300 dates and numbers may easily be remembered through life. The interrogative system of education is partly founded on the same principle of association.

MOAT (in Fortification.) A deep trench dug round the ramparts of a fortified place.

MOCKING-BIRD. A sort of American thrush, which has the faculty of imitating the notes of other birds.

MODE (in Music.) A regular disposition of the tune in relation to certain principal sounds, which are called the essential chords of the bass.

MODEL. An original pattern, or the shape or design of any thing in miniature; particularly applied to an artificial pattern made in wood, stone, plaster, or other matter, with all its parts and proportions, in order to give a full idea of the work that is to be executed.

MODERNS. A name given generally to those who have distinguished themselves since the revival of learning, as compared with the ancients, and also with those of the middle ages.

MODULE (in Architecture.) A certain measure by which the proportions of columns are regulated.

MODUS DECIMANDI (in Law.) Something paid as a compensation for tithes, on the principle of a moderate equivalent.

MOHAIR. The hair of a kind of goat at Angora in Turkey, of which the natives make camblets.

MOIDORE. A Portuguese coin, equal to six dollars.

MOLASSES. The gross fluid matter that remains of sugar after boiling; the scum of the sugarcane.

MOLE (among Mariners.) A long pier or artificial bulwark of masonry, extending obliquely across a harbour.

MOLE. A quadruped about six inches in length, living in subterranean burrows, which it rapidly forms by its snout and feet, being able to withdraw its eyes at pleasure.

MOLLUSCA. An order of animals under the class vermes in the Linnæan system, comprehending naked simple animals not included in a shell, but furnished with limbs, as the slug, star-fish, cuttle-fish, sea urchin, &c.

MOLTING. The changing of feathers, hairs, or horns, in birds and beasts.

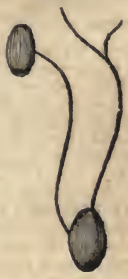
MOLYBDATES. Salts formed from molybdic acid in combination with earths, alkalies, &c.

MOLYBDENUM. A metal which exists, mineralized by sulphur, in the ore called the ore of Molybdena. Molybdenum has hitherto been obtained only in small globules.

MOMENT. The quantity of motion in a moving body.

MONADELPHIA (in Botany.) One of the Linnæan classes, consisting of plants in which all the stamens are united below into one cylindrical body.

MONANDRIA (in Botany.) One of the Linnæan classes, consisting of plants that have only one stamen.



MONARCHY. A government in which the supreme power is vested in one person.

MONASTERY. A college of monks or nuns; a house of religious retirement.

MONDAY. The second day of the week.

MONEY. Whatever is made the medium of trade for determining the value of commodities in buying or selling. It consists either of coins, or pieces of stamped metal, or of paper money, or moneys of account. Paper money is called paper currency, to distinguish it from specie, metallic currency, or cash. When it is plentiful with reference to commodities and labour, they are said to be dear; but when commodities and labour are plentiful in reference to money, they are said to be cheap; dearness and cheapness being mere relative terms.

MONGREL. Any creature of a mixed breed.

MONK. One of a religious community, who dwells in a monastery, under a vow of observing the rules of the order he belongs to.

MONKEY. A well known animal, with a long tail, cheeks pouched, and haunches naked,

as represented underneath. It is the general name of the ape, baboon, and simia tribe, the several varieties of which are principally found in the tropical climates. They inhabit forests in prodigious numbers, and, though mischievous, their manners are fantastical and interesting. They have hands like man, and some of them walk on two legs, but they practise no arts beyond the necessities of the hour. They are affectionate to their young, and often exhibit great sagacity, but their brain is smaller than that of man, and they are without his risible muscles. They throw missiles with great dexterity, and live on vegetables.

MONKEY (in Military Affairs.) A machine used for driving large piles of wood.

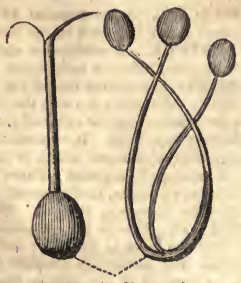
MONKSHOOD, or ACONITE. A poisonous plant, bearing a fine blue flower.

MONOCEROS. One of the new constellations in the northern hemisphere.

MONOCHORD. A musical instrument with one string.

MONODY. A funeral ditty.

MONOECIA (in Botany.) One of the Linnæan classes, including plants that have male and female flowers on the same plant, as the plane-tree, hazel, chestnut, cucumber, &c.



MONOGYNIA (in Botany.) An order in the Linnæan system, comprehending plants that have only one pistil or stigma in a flower.

MONOLOGUE. A soliloquy, or scene where one only speaks.

MONOPETALOUS. One-petalled, applied to flowers, the corolla of which consists of one petal only.

MONOPOLY. A grant from the public authorities to any person or persons for the sole trading in any commodity; also, the engrossing any trade, or the sale of any commodity, by an individual or company, in order to enhance the price.

MONOSYLLABLE. A word of one syllable.

MONOTONY. Sameness in the tone of the voice; a fault in elocution or delivery.

MONSOONS, or TRADE WINDS. Periodical winds in the Indian sea, that blow one half the year one way, and the other half on the opposite points. These points and times of shifting are different in different parts of the ocean.

MONTH (in Chronology.) The twelfth part of a year, otherwise called a calendar month, to distinguish it from the astronomical month, which is either solar or lunar. A solar month, or the time in which the sun passes through a whole sign of the zodiac, is 30 days 16 hours 29 minutes 5 seconds; a lunar month, or the period of one lunation, is 29 days 12 hours 44 minutes.

MOOD (in Grammar.) The manner of forming a verb, or the manner of the verb's inflections, so as to express the different forms and manners of the action, or the different intentions of the speaker: as the indicative mood, which declares a thing; the imperative mood, by which one commands; the subjunctive mood, which implies a conditional action; the potential mood, which denotes the possibility of doing the thing; and the infinitive mood, which expresses the action indefinitely.

MOON. One of the secondary planets, and a satellite to the earth, 240,000 miles distant, marked thus ☽; is in diameter 2160 miles, and fifty times less than the earth. The surface of the moon is diversified with mountains and valleys. Her sidereal or periodical motion on her own axis she performs in 27 days 7 hours 43 minutes and 11 seconds; her synodical motion, or her motion in her orbit round the earth, she performs in 29 days 12 hours 44 minutes 12 seconds; the former is called the periodical, and the latter the synodical month.

MOONSTONE. A pure kind of feldspar, found in Ceylon and Switzerland.

MOOR, or MOOR-LAND. A black, light, soft soil, remarkably loose, without any admixture of stones, and containing a very small proportion of clay or sand. This earth usually forms the uppermost stratum of fen lands, and consists almost wholly of pure vegetable matter, which renders it very fertile.

MOOR. A native of the Barbary States, in Africa. These states, which consist of Tripoli, Tunis, Algiers, and Morocco, occupy the narrow country between the great desert and the Mediterranean Sea, and extend from Egypt to the Atlantic Ocean. The part between the Atlas mountains is remarkably fertile, and is well watered. The Moors are the ruling peo-

ple, and form the majority of the inhabitants in all the cities; they are proud, indolent, vicious, cruel, and perfidious. The climate is remarkably mild and salubrious.

MOOR-COCK. A bird of the grouse tribe, inhabiting the heaths of Scotland and the north of England.

MOOR-HEN. A water-fowl of the coot tribe.

MOORING. Laying out the anchors for the secure riding of the ship.

MOOSE. An animal of the deer kind, as large as a horse, the skin of which is so hard that it can almost resist a musket ball.

MORALITY. That relation or proportion which actions bear to a given rule. It is generally used in reference to a good life. Morality is distinguished from religion thus:—"Morality comprehends only a part of religion; but religion comprehends the whole of morality. Morality finds all her motives here below; religion fetches all her motives from above. The highest principle in morals is a just regard to the rights of men; the first principle in religion is the love of God."

MORAVIANS, or HERNHUTTERS. A sect of professing Christians, who prevail in Germany, and are distinguished both by the singularity of their doctrine and their manners.

MORDANTS (in Dyeing.) Substances combined with the vegetable or animal fibre, in order to fix the dye-stuff.

MOROCCO. A fine kind of leather, prepared from the skin of an animal of the goat kind, and formerly imported from the Levant.

MOROXYLIC ACID. An acid procured from the white mulberry.

MORSE. An amphibious animal, like a sea-ox in size, but like a lion in shape. It inhabits the ocean near the Arctic Pole.

MORTAR. A thick, short cannon, having a large bore, and mounted on a low, strong carriage, which serves for throwing bombs, &c.

MORTAR (with Apothecaries.) A strong vessel for pounding things in with a pestle.

MORTAR (among Masons.) Lime, sand, and hair mixed with water, so as to make a cement.

MORTGAGE. The assignment of an estate or any other property, in pledge for the payment of a debt.

MORTISE, or MORTOIS (among Carpenters.) A kind of joint consisting of a hole of a certain depth cut in a piece of timber so as to receive another piece called the *tenon*.

MOSAIC, or MOSAIC WORK. An assemblage of little pieces of glass, marble, precious stones, &c. of various colours, cut square, and cemented on a ground of stucco, in imitation of painting.

MOSQUE. A temple or place of religious worship among the Mahometans. The church of St. Sophia, at Constantinople, is converted into a Turkish mosque.

MOSQUITO. A large kind of gnat, common in warm climates, which inflicts deep wounds on those whom it attacks.

MOSS. A parasitic plant, something like down, that adheres to the trunks of trees, and was formerly supposed to be merely an excrescence, but is now found to be a perfect

plant, having roots, flowers, and seeds, yet cannot be propagated by seed. It is oftentimes very injurious to fruit trees, and ought to be scraped off in the spring season and in moist weather.

MOTH. An elegant insect, something similar to the butterfly, but not so large. It is very injurious to cloth and furniture.

Grub of the Moth.

MOTHER. The female parent, to whose care, tenderness, and personal sacrifices, children are indebted for their existence through the helpless state of infancy, and for all their early education and welfare; and to whom, as their devoted friend, they ought always to display unabated affection, gratitude, and sympathy.

MOTHER. The mouldy lees of wine, beer, &c.

MOTHER OF PEARL. The shell of pearl fish.

MOTION (in Physiology.) A change of place, which is absolute if it be independent of any other body, and relative if it changes the relative place of a moving body, as in the case of two vessels sailing in the same or contrary directions with different velocities. Animal motion is that by which the situation, figure, or magnitude of the parts of animals is changed, which takes place in the act of their growth.

MOTION (in Law.) An application in court, either by the parties themselves or their counsel, in order to obtain some order or rule of court.

MOTTO. A word or short sentence put to an emblem or device, or to a coat of arms in scroll at the bottom of the escutcheon.

MOVEABLES. Personal goods.

MOVEMENT (in Music.) The progress of sounds from grave to acute, or from acute to grave.

MOVEMENT (among Watchmakers.) A name for the inner works of a watch, &c. that move.

MOULD (in Horticulture.) Earth mixed with dung, &c. fit for the reception of seeds.

MOULD (among Mechanics.) A form or frame in which any thing is cast, as glaziers' moulds, tallowchandlers' moulds, and the like.

MOULDINESS. A term applied to bodies, as bread, &c. which are in a state of corruption, from the action of the damp or air. This shows itself by a white down, which, when seen through a microscope, appears, like the moss, to be a kind of plants, although some have imagined it to look like animalculæ.

MOULDINGS (in Architecture.) Projectures beyond the naked wall, such as cornices, door-cases, &c. which are cut so as to be ornamental.

MOUND (among Antiquarians.) A ball or globe with a cross upon it, which kings are represented as holding in their hands, to designate their sovereign majesty.

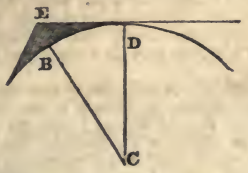
MOUND (in Fortification.) Any thing raised, as a bank of earth, &c. to fortify or defend a place.

MOUNT. An artificial elevation of earth.

MOUNTAIN ASH. An ornamental tree, which in its leaf resembles the common ash, but it bears a clustered flower, that is succeeded by a beautiful red berry.

MOUNTAINS. Extraordinary elevations of the earth's surface, appertaining to all planetary bodies, as appears by viewing the moon and Venus through a telescope. On the earth they consist of primitive rocks, as granite, trapp, and porphyry, other rocks and earths being subsequent formations of fire, water, and air, abutting against the mountains, and filling up the valleys. The principal ridges are, the Andes, in South America, from three to five miles high; the Himalayas, in North Hindostan, of equal height; the Alps, in Europe; the Stony Mountains, in North America; the

mountains of Caucasus and Thibet, in Asia; those of the Moon, in Africa; those of Norway; the Pyrenees, in Spain; and the Welch and Scotch mountains. The action of air, water, and volcanic fires, waste and level these ridges, and under different circumstances, their débris, or ruins, form by successive operations all varieties of earths and soils. The ascent of them carries men into colder regions, and above the clouds, and presents nature under a variety of novel aspects. Their height is determined by trigonometry: thus, the height of E is determined by the distance D, at which its top can be seen. We then know the angle D C B, and the radius, C D, to find C E, from which, deducting C D, or C B, we have B E, the height required.



MOUNTING (in Military Affairs.) Going upon some arduous or specific duty, as mounting a breach, that is, running up to it; mounting the trenches, going upon duty in the trenches, &c.; but mounting a cannon is setting it on its carriage.

MOUSE. A little animal that haunts houses and fields. It is nearly allied to the rat, and is classed with it under the name of Mus in the Linnæan system. Field mice are frequently white.

MOUSE-EAR. A plant very similar to chickweed, but the flower is larger, and the fruit shaped like an ox's horn, gaping at the top.

MOUTH. The aperture in the head of any animal at which the food is received, and by which the inspiration and expiration of the air is performed; also, the aperture of many other things, so called from the similarity of situation or use, as the mouth of a cannon, where the powder and ball go in and out; the mouth of a river, where the water passes in and out, &c.

MS. An abbreviation for manuscript.

MSS. An abbreviation for manuscripts.

MUCILAGE. A slimy substance of sufficient consistence to hold together, as a solution of gum or any tenacious liquid, or a viscous extraction from roots and other parts of vegetables.

MUCUS. A viscous fluid secreted by certain glands in the body.

MUFFLE. A small earthen oven used for cupellation.

MUFTI. The chief priest among the Mussulmen, appointed by the grand seignior himself. He is the oracle in all doubtful questions of their law.

MULATTO. Any one born of a black man and white woman, and vice versa.

MULBERRY TREE. A large spreading tree, the fruit of which resembles the raspberry in its seedy make, but is much larger. The white mulberry is cultivated in France and Italy for its leaves to feed silkworms, but the Persians make use of the common black mulberry for this purpose. The Japanese make paper of the bark, and in the Sandwich Islands a kind of cloth is made from its fibres.

MULE. A mongrel kind of quadruped, generated between an ass and a mare, and sometimes between a horse and a she ass. Mules are hardy sure-footed animals, used much in mountainous countries, as about the Alps and Pyrenees; but they are incapable of propagating their species. If ill-treated, it displays proverbial obstinacy.

MULE (in Botany.) Any flower or fruit produced from two sorts.

MULETEER. A driver of mules.

MULLET. A fish with a head almost square, and a silvery body.

MULTIPLE. A number which includes another a certain number of times, as 6 the multiple of 2.

MULTIPLICATION. One of the four simple rules of arithmetic, which consists in the increasing of any one number by another as often as there are units in that number by which the one is increased. The number multiplying is the multiplier; the number multiplied the multiplicand; and the result of the operation is the product.

MULTIPLYING-GLASS. A glass otherwise called a polyhedron, being ground into several planes that make angles with each other, and cause objects to appear increased in number.

MULTUM IN PARVO. Much in a small compass.

MUM. A kind of liquor made of wheat, and brought from Brunswick in Germany.

MUMMIES. The name of dead bodies which have been preserved for ages from cor-

ruption in Egypt, by a particular method of embalming; also, the liquor running from such mummies, which approaches more or less to a state of solidity.

MUNDIC. A sort of copper ore; a sulphuret of copper of a greenish yellow colour.

MUNICIPAL (in the Civil Law.) An epithet signifying, 'invested with the civil rights of a citizen;' with us, it is an epithet for what belongs to a town or city, as municipal laws, laws enjoyed by the inhabitants of a town or city; and in an extended sense, municipal law is the law by which any particular state or country is governed.

MURAL CROWN. A crown among the Romans given to him who first scaled the walls of a city.

MURDER (in Law.) The wilful and felonious killing a man with malice prepense.

MUREX. A shell-fish noted among the ancients for its purple dye; in the Linnæan system it is a genus of insects under the class vermes, the animal of which is a limas: the shell is univalve and spiral.

MURIATES. Salts formed from muriatic acid with certain bases, as the muriate of ammonia, of soda, &c.

MURIATIC ACID (otherwise called SPIRIT OF SALT.) An acid procured from salt, consisting of hydrogen combined with chlorine gas. Its odour is pungent, and its taste acid and corrosive. If an inflamed taper be immersed in it, it is instantly extinguished: it is also destructive of human life.

MURRAIN. A wasting contagious disorder among cattle.

MUS (in Zoology.) A generic term, in the Linnæan system, for a tribe of animals of the class mammalia, and order glires, distinguished principally by their teeth. The most remarkable species are the common rat and mouse, the musk rat, the Norway rat, &c.

MUSCI. Mosses; one of the families into which Linnæus has divided the vegetable kingdom. It is of the class cryptogamia, and comprehends a vast variety of species, as the earth-moss, bristle-moss, spring-moss, water-moss, &c.

MUSCLE (in Anatomy.) A fleshy fibrous part of the body, consisting of a bundle of thin parallel plates, divided into a great number of fasciculi or little threads and fibres, so constructed as to admit of relaxation and contraction, and serving as the organ of motion. The extremities of the muscles are inserted into the bones. There are in man 201 muscles, or pairs of muscles.

MUSES (in the Heathen Mythology.) Divinities supposed to preside over the arts and sciences. Some writers reckon only three Muses, Mneme, Acœde, and Melite; or Memory, Singing, and Meditation; but the most ancient authors reckon nine, viz. Clio, or glory; Euterpe, pleasing; Thalia, flourishing; Melpomone, attracting; Terpsichore, rejoicing the heart; Erato, the amiable; Polyhymnia, a multitude of songs; Urania, the heavenly; and Calliope, sweetness of voice. To Clio, they attributed the invention of history; Melpomene, the invention of tragedy; Thalia, of comedy; Euterpe, of the use of the flute; Terpsichore, of the harp; Erato, of the lyre and lute; Calliope, of heroic verse; Urania, of astrology; Polyhymnia, of rhetoric. Herodotus divided his history into nine books, to each of which he gave the name of one of the muses.

MUSEUM. A collection of rare and interesting objects, particularly in the departments of Natural History; also, the place where the collection is deposited. The term was originally applied to a study or a place set apart for learned men in the royal palace of Alexandria by Ptolemy Philadelphus, who founded a college, and gave salaries to the several members, adding also an extensive library, which was one of the most celebrated in the world.

MUSHROOM. A plant, the generic name of which, in the Linnæan system, is agaricus. It is a spongy substance, which grows up to its bulk on a sudden. The seeds of mushrooms have not long been discovered.

MUSIC. The science which treats of the number, time, division, succession, and combination of sounds, so as to produce harmony. It is divided into Theoretical Music, which inquires into the properties of concords and discords, and explains their combinations and proportions for the production of melody and harmony; and Practical Music, which is the art of applying the theory of music in the composition of all sorts of tunes and airs.

MUSIC, HISTORY OF. The first traces of music are to be found in Egypt, where musical instruments, capable of much variety and ex-

pression, existed at a time when other nations were in an uncivilized state. The invention of the lyre is by them ascribed to Hermes Trismegistus, the Mercury of the Egyptians, which is a proof of its antiquity; but a still greater proof of the existence of musical instruments among them at a very early period is drawn from the figure of an instrument said to be represented on an obelisk, erected, as is supposed, by Sesostris at Heliopolis. This instrument, by means of its neck, was capable, with only two strings, if tuned fourths, of furnishing that series of sounds called by the ancients a heptachord; and if tuned fifths, of producing an octave. As Moses was skilled in all the learning of the Egyptians, it is probable that the Israelites, who interwove music in all their religious ceremonies, borrowed much from that people. That the Greeks took their first ideas of music from the Egyptians is clear from this: that they ascribed the invention of the lyre to Mercury, although they made Apollo to be the god of music, and gave him that instrument to play upon. In no country was music so much cultivated as in Greece. The muses, as well as Apollo, Bacchus, and other gods and demigods, practised or promoted it in some way or other. Their poets are supposed to have been like the Celtic and German bards, and the scalds of Iceland and Scandinavia, who went about singing their poems in the streets, and the palaces of princes. In this manner did Orpheus, Homer, Hesiod, Sappho, and others, recite their verses; and in after times, on the institution of the games, Simonides, Pindar, and other poets, celebrated in public the exploits of the victors. The instruments known in the time of Homer were the lyre, flute, syrinx, and trumpet. The invention of notation and musical characters is ascribed to Terpander, a poet and musician, who flourished 671 years before Christ. We afterwards find philosophers, as well as poets, among the number of those who admired and cultivated music theoretically as well as practically, as Pythagoras, Plato, Aristotle, Aristoxenus, Euclid, and many others. Pythagoras is celebrated for his discoveries in this science; namely, for that of musical ratios, and the addition of an eighth string to the lyre. The former of these he is supposed to have derived from the Egyptians. He also explained the theory of sounds, and reduced it to a science. Aristoxenus is the most ancient writer on music of whose works there are any remains. Euclid followed up the idea of Pythagoras' ratios, which he reduced to mathematical demonstration. To this list of Greek writers may be added Nichomachus Gerasenus, Alypius, Gaudentius, Bacchius senior, Ptolemy the astronomer, and Aristides Quintilian, whose works are still extant. These wrote under the Roman emperors, many of whom cultivated music and followed the theory of the Greeks. Among the Roman writers may be reckoned Vitruvius, who, in his architecture, touches lightly on this subject; also Martianus Capella and Boethius, who wrote on the decline of the empire. After them some centuries elapsed before the science of music met with any particular attention. Its introduction into the church service prevented it from falling, like other arts, into total neglect. Instrumental music was introduced into the public service of the church under Constantine the Great. The practice of chanting the psalms was begun in the western churches by St. Ambrose about 350 years after Christ; three hundred years after, the method of chanting was improved by St. Gregory the Great. It was probably introduced into England by St. Augustine, and greatly improved by St. Dunstan. The use of the organ probably commenced in the Greek church, where it was called hydraulicon, or the water-organ. The first organ known in Europe was sent as a present to King Pepin from the Emperor Constantine Copronymus. It came into general use in France, Germany, and England, in the tenth century. Soon after this, music began again to be cultivated as a science, particularly in Italy, where Guido, a monk of Arezzo, first conceived the idea of counterpoint, or the division of music into parts by points set opposite to each other, and formed the scale afterwards known by the name of the gamut. This was followed by the invention of the time-table, and afterwards by regular compositions of music. But the exercise of the art was for a long time confined to sacred music, during which period secular music was followed by itinerant poets and musicians, after the manner of the ancients. Of this description were the troubadours in France, the Welsh bards or harpers in England, and the Scotch minstrels.

MUSICIAN. A professor of and practitioner in music; one who performs on any musical instrument.

MUSK. A quadruped, in size and figure resembling a small roebuck. It is a native of Thibet and other parts of India, and is remarkable for having an oval bag in the lower

part of its belly, containing the perfume called musk.

MUSK. An oily, friable, brownish substance, generated in the body of the musk, of the most powerful and penetrating smell, which is used as a perfume. It is partially soluble in water, which receives its smell, and also in alcohol, to which, however, it does not communicate its odour.

MUSK-APPLE and MUSK-PEAR. A sort of apple and pear having the perfume of musk.

MUSKET. A commodious sort of fire-arms used by soldiers. The regular length of a musket is 3 feet 8 inches from the muzzle to the pan.

MUSKET-SHOT. The distance that a musket will carry, which is about a hundred and twenty fathoms.

MUSK-RAT. An animal of the beaver kind, which yields an oily fluid, having the perfume of musk.

MUSK-ROSE. A sort of rose from which a highly odorous oil is extracted at Tunis.

MUSLIN. A fine sort of cotton cloth.

MUSQUETEERS. Soldiers armed with muskets.

MUSSEL. A testaceous animal inhabiting two shells, from which, in some seas, pearls are often obtained. It is found in large beds, adhering to other bodies by a long silky beard.

MUSSULMAN, or MOSLEM, i. e. Faithful. The name assumed by Mahometans.

MUST. The newly pressed juice of the grape, which, by a chymical analysis, is found to contain water, sugar, jelly, gluten, and bitartrate of potash.

MUSTER. A review of soldiers under arms.

MUSTER-ROLL. A specific list of the officers and men in every regiment, troop, or company.

MUTATIS MUTANDIS. Things being changed as they ought to be.

MUTE (in Law.) Not answering directly to the arraignment, on an indictment for felony. A prisoner is said to stand mute when he will not put himself upon the inquest.

MUTE (in Mineralogy.) An epithet for minerals which do not ring when they are struck.

MUTES (in Grammar.) Letters which cannot form a sound without a vowel after them, as, b, c, d, g, k, p, q, t.

MUTES (in the Grand Seignior's Seraglio.) Dumb officers, who are sent to strangle, with the bow-string, bashaws or other persons who fall under the sultan's displeasure.

MUTINY. A revolting from lawful authority, more particularly among soldiers and sailors.

MYRMELEON. A genus of insects in the Linnæan system, one species of which is remarkable on account of its larva, which has the property of preparing a sort of pitfall for the ensnaring of other insects.

MYRRH. A resinous concrete juice, procured from a tree growing in Arabia and Abyssinia. The sort of tree which yields this substance is not exactly known, but, according to Bruce, it is a sort of mimosa. Myrrh is in the form of tears, brittle, of an aromatic taste, not melting when heated, and burning with difficulty; yields oil by distillation, and forms a yellow solution with water.

MYRTLE. A fragrant shrub, which, among the ancients, was sacred to Venus. The common myrtle is a native of Asia, Africa, and Europe.

MYRTUS. The generic name of the myrtle in the Linnæan system; includes also among its species the pimento or allspice tree.

MYTHOLOGY. The history of the mysteries and allegories of the fabulous heathen deities and heroes, and of the divine honours paid to them.

N.

N, the thirteenth letter of the alphabet, stood as a numeral for 900, and, with a dash over it, thus, $\bar{N}$, 9000. N. or No. stands as an abbreviation for numero, number; also, for north, note, noun, &c.

NABOB, or NAVOUB. An Indian word for a deputy; a title of dignity and power applied to those who act under the soubahs or viceroys.

NABONASSAR. First king of Babylon, in whose reign, according to Ptolemy, astronomical observations were made; whence, an era was formed from this king's reign, called the era of Nabonassar, dated 747 years before Christ.

NADIR (in Astronomy.) That point in the heavens opposite to the zenith, and directly under our feet, or a point in a right line, supposed to be drawn from our feet through the centre of the earth, and terminating in the lower hemisphere.

NAIL (in Anatomy.) The horny lamina on the extremity of the fingers and toes.

NAIL (with Ironmongers.) Spikes of iron and brass, having heads, and fitted for binding several pieces of wood together.

NAIL (in Commerce.) A measure of length, containing the sixteenth part of a yard.

NAKED. A term in Architecture, applied either to a column or a wall, to denote the face or plain surface from which the projections take their rise.

NANKIN. A well known stuff, so called from Nankin, a city in China.

NAPE. The hinder part of the neck.

NAPHTHA. A native combustible liquid, and one of the thinnest of the liquid bitumens issuing from the earth, and found on the borders of springs on the shores of the Caspian Sea. It feels greasy, has a bituminous smell, takes fire on the approach of flame, and is so light as to float on the water.

NARCISSUS. A genus of plants, which is cultivated in gardens on account of its sweet-smelling flowers, which are either yellow or white.

NARCOTICS (in Medicine.) Soporiferous and stupifying medicines, as opium and its preparations.

NARVAL. An animal of the whale tribe, remarkable for its single tooth standing out like the horn of the unicorn.

NASTURTIUM. A plant, which is cultivated in gardens, and bears a flower of a deep crimson colour. The seeds, when green, make fine pickles, and when dried and bruised, have a pungent smell that causes sneezing.

NATION. Families of men, living under the same institutions and laws, generally created by the ambition of a chief, as in monarchies, or by mutual convention, as in republics. Every nation is large enough which is able to protect itself by its own power, or by alliances, against the outrages of other nations, and nothing is gained to the people by an enlargement, while it adds to the patronage of the government, and to its power of enslaving the whole. Governments, therefore, encourage a passion of aggrandisement, and hence the wars and follies of history; but wise men should prefer to belong to a happy and well-governed rather than an extended empire.

NATIONAL DEBT. Loans advanced to government, which constitute the funds or stocks, for which interest is paid from revenues set apart for the purpose.

NATRON (in Chymistry.) A term frequently given to soda, upon the supposition that it is the natron or nitrum of the ancients. Natural natron occurs either as an efflorescence on the surface of the soil, or on decomposing rocks of particular kinds, or on the sides and bottoms of lakes that become dry during the summer. In Hungary, the natron lakes are very numerous, and afford a vast quantity of it annually. About sixty miles north-east of Grand Cairo, in Egypt, there is a lime stone valley, in which there are several extensive lakes, which become dry during the summer, and leave their sides and bottoms covered with a great quantity of soda or natron.

NATURAL BRIDGE. A great natural curiosity over Cedar Creek, in Virginia. It is a huge rock extending across a deep fissure, at the height of about 200 feet from the water. The bridge is covered with earth and trees, is 90 feet long, 60 feet wide, and 40 feet thick.

NATURAL HISTORY. That branch of knowledge which treats of the characteristics or distinctive marks of each individual object, whether animal, vegetable, or mineral; as also of its peculiar habits, qualities, uses, &c.

NATURALIZATION (in Law.) The admitting of an alien into the number of natural subjects.

NATURAL ORDERS (in Botany.) A mode of classifying plants according to their natural or more obvious characteristics.

NATURAL PHILOSOPHY. That branch of science which treats of the powers of nature, the properties of natural bodies, and their actions on one another, comprehending under it the several divisions of astronomy, chymistry, electricity, galvanism, hydraulics or hydrostatics, magnetism, mechanics, optics, pneumatics, &c.

NAVAL ARCHITECTURE. The science of ship building, comprehending the theory of delineating marine vessels upon a plane surface, and the art of framing them upon the

stocks according to the proportions exhibited in a regular design.

NAVAL ARCHITECTURE, HISTORY OF. The first example of any construction fitted to be borne up by the waters is recorded in Scripture, in the case of the ark built by Noah under the divine assistance and commands. As this was built by more than human aid, it is not surprising that we hear of no farther attempts at building vessels of any kind, until the nation of the Egyptians was formed, who doubtless profited by those arts and sciences which, as is generally admitted, were practised before the flood, and transmitted by Noah and his family to his posterity. The Egyptians, we are told, constructed the barks which they used on the Nile of planks cut out of the acacia, or Egyptian thorn; the planks were nearly square, measuring about three feet each way, and being lapped over each other like tiles, were fastened together with wooden pins. The joints and seams were carefully calked with the papyrus, and benches of the same material were formed for the rowers. As the necessity of some impelling and directing force in aid of human labour was soon felt, a rudder and a sail were quickly added. The sail, which was made of the papyrus, was fastened to a pole serving as a mast, which was made of the acantha. As such vessels were incapable of stemming the current of the river when the wind was unfavourable, they used to be towed by persons on the bank, and when they went with the current, the Egyptians used to accelerate their motion by tying a hurdle of tamarisk to the prow of the vessel, and letting it down into the water, the stream acted on the hurdle more strongly than it would on the sides of the vessel, and thus increased the velocity of its motion very materially. In order to preserve a due balance between the head and the stern, which might otherwise have been destroyed by the action of the hurdle, they caused a stone of considerable magnitude, pierced through the middle, to be suspended by a rope from the stern, which enabled them to swim nearly with an even keel.

The first contrivance to supply the place of a commercial vessel is generally admitted to have been a kind of raft, or collection of trees fastened together with ropes, made from the bark. But as in a structure so rude they were altogether without the power of directing their course, they set about remedying this inconvenience, by putting a few thick planks to the depth of three or four feet in the water between the joists of the trees which composed the raft. These being raised or lowered at the pleasure of the pilot, served in some measure the purpose proposed. With no better contrivances than this, the Phenicians are said to have visited the islands of Sicily, Corsica, and various other islands in the Mediterranean. It is also worthy of observation, that floats answering to the description of these were found in the South seas in the last century.

Although the Greeks were not remarkable for a spirit of commercial enterprise, yet the remains of antiquity furnish us with ample evidence of the advances which they made in the art of shipbuilding. They had vessels of different forms and sizes, distinguished, according to their use, into ships of passage, ships of burden, and ships of war. The latter were likewise designated triremes, quadremes, and quinquiremes, according to the number of banks of oars, which were raised in a sloping direction one above another. Those which had most banks were built highest, and rowed with the greatest strength. The Greeks, in all probability, derived their knowledge of shipbuilding from the Carthaginians, a warlike and trading people, descended from the Phenicians, who were celebrated for their skill in the construction and management of vessels. In consequence of their contests with the Romans, the latter, after having suffered one or two defeats in naval engagements, acquired the art of building ships from their rivals, and successfully employed it to their overthrow.

The modern art of shipbuilding appears to have been derived from the northern tribes, among whom we find that trees hollowed out like canoes were first used. The crusades first gave the impulse to improvements in shipbuilding, which, notwithstanding, continued for some time at a low ebb. Even in the reign of Edward the First, ships were very insignificant in point of size, for it appears that forty men were deemed sufficient to man the largest vessels in England. The states of Venice and Genoa probably first increased the size of their ships, but they were soon surpassed by the Spaniards, who first employed cannon. The Hanse Towns made such advances in naval architecture, that in the fourteenth century it was usual for them to let their ships out to foreign princes. In the reign of Henry IV. ships of considerable size began to be built in England, and they continued to increase in magnitude until the reign of Henry VIII. when two very large ships were built, namely, the Regent, of 1000 tons burthen, and the Henry Grace Dieu, which was larger. From the reign of Charles II. the navy of Great Britain acquired great importance, and in consequence of the wars which have been since carried on in several subsequent reigns, it has risen to its present state.

In 1829 the naval force of the principal powers of Europe was as follows: viz. Great Britain, 191 ships of the line, 149 frigates, 178 corvettes, 158 brigs—total, 610. France, 33 of the line, 41 frigates, and 148 other vessels—total, 222. Russia, 81 ships of different sizes. Netherlands, 12 of the line, 30 carrying in all 720 guns, and 63 in ordinary. Spain, 6 of the line, 12 frigates, and 94 other

vessels. Portugal, 2 of the line, 6 frigates, 7 corvettes, 2 brigs, and 6 smaller vessels.

In the late war with Great Britain, the American Navy, though in an infant state, distinguished itself, and obtained an imperishable fame. It now consists of 7 ships of the line, 11 frigates, 2 corvettes, 12 sloops of war, and 7 schooners.

NAVAL CROWN. A crown among the Romans, given to him who first boarded an enemy's ship; it was a circle of gold representing the beaks of ships.

NAVE. The body or main part of a church.

NAVIGATION. The art of conducting a vessel at sea from one port to another. This is navigation properly so called, to distinguish it from common navigation or coasting, that is, conducting vessels from one port to another lying on the same coast; and inland navigation, which is performed by small craft on canals. There is also a submarine navigation, that is, the art of sailing under water by means of the diving bell, &c. Navigation is divided into theoretical navigation, which treats of the difference of latitude, the difference of longitude, the reckoning or distance run, the course or rhumb run on, besides the different modes of sailing—plane sailing, in which the plane chart is made use of; Mercator's or globular sailing, in which Mercator's chart is used, &c. Practical navigation has respect to the places sailed to or the waters sailed over, and is either proper, common, inland, &c. as before explained.

NAVIGATION, History of. Navigation and commerce without doubt took their rise together, for the desire of gain being one of the most powerful incentives to action, would naturally lead men to explore distant countries. Hence we find that the Phenicians, particularly those of Tyre, who were the first trading people on record, were also the first to make fleets, and, by the aid of astronomical observations, to extend their voyages to some distance from their own shores. The Carthaginians followed the course of their ancestors the Tyrians, and addicted themselves so thoroughly to trade and navigation, that they surpassed every other nation of antiquity in the cultivation of these two arts. They first made the quadremes, or four-oared galleys, and probably were the first who made cables for their large vessels of the shrub spatum. They likewise pushed their discoveries to a vast extent. They were perfectly acquainted with the Mediterranean and all the ports in it, and proceeded to the westward farther than any other nation. Britain and the Canaries were known to them, and in the opinion of some they even went as far as America. The formidable fleets they fitted out, the quantity of shipping they always kept in their employ, and the honour they so long enjoyed of being the masters of the sea, sufficiently attest the advances which they made in navigation. As the Greeks and Romans were more addicted to war than commerce, they employed their shipping principally in transporting their men to the countries they were going to attack, or in engaging their enemies at sea. That the Athenians excelled all the other Greeks in their maritime warfare, is evident from the victories which they gained over the Persians by sea. As to the Romans, they are said by Polybius to have been utter strangers to naval affairs, and quite ignorant of ship building, before the first Punic war, when a Carthaginian galley having accidentally stranded on the coast of Italy, was taken by them, and served as a model for the construction of vessels. Of this they made so good a use as to raise a fleet of one hundred and twenty galleys, with which they were enabled to beat the Carthaginians on their own element. It does not appear, however, that either of these people went to any distance in their vessels, either for purposes of trade or curiosity. The only voyage of discovery we read of in antiquity, was that made by Nearchus, under the auspices of Alexander. In all other countries navigation was encouraged solely for the purposes of commerce, as by the Egyptians and the Byzantines, and subsequently by the Venetians and Genoese until the time of the Crusades, when a spirit of adventure was excited throughout all Europe, and preparations were made for voyages to the Holy Land, which led to the improvement of navigation. The laws of Oleron, framed and established by King Richard I., show that a system of maritime policy was now thought necessary. Of the progress of the English navy it suffices here to observe, that the first statutes respecting it were passed in the reign of Richard II. and that from that period to the present it has been the object of government to raise it to the highest pitch of perfection. As to the art of navigation generally, nothing contributed so much to its advancement as the invention of the mariner's compass, in the fourteenth century, which gave so great a facility to the exploring of unknown regions. From this time many considerable voyages were made, particularly by the Portuguese, under the auspices of Henry duke of Visco, who was particularly skilled in cosmography, and employed a person from the island of Majorca to teach navigation, and to make instruments and

charts. In the subsequent reign of John II. one Martin de Bohemia, a Portuguese, native of the island of Fayal, a pupil of Regiomontanus, calculated, about 1485, for the use of navigators, tables of the sun's declination, and recommended the astrolabe for taking observations at sea. About the same time, Columbus conceived the idea of exploring a passage to India by sailing directly towards the west across the Atlantic ocean, and being furnished with a small armament of three ships by Ferdinand and Isabella of Spain, he set sail in August, 1492, and steered directly for the Canary Islands, thence holding his course due west, he stretched away into unfrequented and unknown seas. After encountering incredible difficulties and hardships from the elements, and a scarcity of provisions, but above all from the mutinous spirit of his crew, he arrived at Guanami, one of the large cluster of islands called the Lucaya, or Bahama Isles. He also discovered Cuba, Hispaniola, and several other small islands, and having left a colony in a fort at Hispaniola, returned to Spain in March, 1493. In September following he set out on his second voyage, and sailed by the Leeward Islands to Hispaniola; and in a third voyage, undertaken in 1498, he discovered the continent of America. In the same year Vasco de Gama returned to Lisbon from a voyage to the East Indies by the Cape of Good Hope. As from practice the art of navigation was thus materially improved, so likewise additional efforts were now made to advance it theoretically, and to extend its cultivation. The emperor Charles V. founded a lecture at Seville for the improvement of navigation, which derived much advantage from the discovery of the variation of the compass, and the use of the cross staff. The subject also now began to engage the pens of the learned. Two treatises, the first of the kind, containing a system of the art, were published in Spanish, the first by Pedro de Medina, at Valladolid, in 1545, called 'Arte de Navegar,' the other at Seville, in 1556, by Marten Cortes, under the title of 'Breve Compendio de la Sphera y de la Arte de Navegar, &c.' which was translated into English, and passed through several impressions.

The finding of the longitude, which is still a desideratum in the art, had even early engaged the attention of writers, for we find that Pedro Nunez, or Nonius, published a treatise on this subject in 1537 in the Portuguese language, which was afterwards printed at Basil in Latin, under the title of 'De Arte et Ratione Navigandi.' In this work the problem of determining the latitude from two observations of the sun's altitude and the intermediate azimuth is resolved. In 1557, Bourne published his 'Regiment for the Sea,' intended as a supplement to Cortes, and in 1581 Michael Coignet, a native of Antwerp, published his 'Instruction Nouvelle des Points plus excellens et necessaires touchant l'Art de Naviger,' intended as an improvement upon Medina. The discovery of the dipping-needle was explained by Robert Norman in his 'New Attractive,' a pamphlet, to which is commonly subjoined William Burrough's 'Discourse of the Variation of the Compass.' In 1594, Captain John Davis published a small treatise, entitled the 'Seaman's Secrets,' which was much esteemed at that time.

As the errors of the plane chart had been much complained of by those who were conversant with the subject, Gerard Mercator was led to construct a universal map, for the purpose of obviating those objections, the use of which was afterwards fully illustrated by Mr. Edward Wright, of Cambridge, who, in his 'Correction of certain Errors in Navigation,' printed in 1599, showed the true method of dividing the meridian from Cambridge, as also the manner of constructing the table, and its uses in navigation. The method of approximation by what is called the middle latitude, is mentioned by Gunter in his works, printed in 1623, but was not brought into general use until some time after. The application of logarithms to navigation was also made by this author in a variety of ways; but Thomas Addison, in his 'Arithmetical Navigation,' is said to have been the first to apply logarithmic tables to the cases of sailing. From this time several writers in England and elsewhere contributed to the improvement of the science, as Gellibrand, in a 'Discourse Mathematical on the Variation of the Needle;' Norwood, in his 'Seaman's Practice;' John Baptist Riccioli, at Bologna, in 1661; Father Millet Dechals, in 1674 and 1677; M. Bougier, in 1698; William Jones, in a 'New Compendium of the whole Art of Navigation;' Peter Bouque, in his 'Nouveau Traité de Navigation;' and Dr. Robertson's 'Elements of Navigation,' to which was added a valuable preface by Dr. James Wilson.

NAVIGATOR. One who follows the practical part of navigation; particularly one who goes on voyages of discovery.

NAUMACHIA. The representation of a sea fight, which, among the Romans, formed a part of the Circensian games.

NAUTICAL. An epithet for what belongs to the navy or navigation, as the Nautical Almanack, an almanack published for the use of mariners.

NAUTILUS. A genus of testaceous worms, one species of which, called the sail shell, floats on the surface of the sea in its shell, by the help of a membrane which it extends, so as to make it serve the purpose of a sail.

NAVY. The whole naval establishment of any country, comprehending the ships, officers, men, stores, &c.

NAZARENES. A term of reproach among the Jews for our Saviour and his disciples.

NAZARITES. A sect among the Jews affecting certain peculiarities.

N. B. i. e. NOTA BENE. Take notice.

NEAP TIDES. Tides in the second and last quarter of the moon, not so high as the spring tides.

NEAT. All kinds of beeves, as, the ox, cow, &c.

NEAT'S FOOT OIL. An oil extracted from the feet of oxen.

NEAT'S LEATHER. Leather made of the skin of an ox or cow.

NEAT WEIGHT. The weight of a commodity without the bag, &c.

NEBULÆ. Spots in the heavens, some of which consist of clusters of exceedingly small stars, others appear like luminous spots of different forms.

NECK. That part between the head and the body.

NECK. Any thing long in the form of the neck, as, the neck of a bottle, a violin, &c.

NECROLOGY. A register of the deaths of benefactors in a monastery; also, a register of distinguished persons who die within a certain period.

NECROMANCY. A sort of magic practised by the Jews, Greeks, and Romans, by which they attempted to raise the dead or make them appear.

NECTAR (in Mythology.) The drink of the gods, according to the poets.

NECTAR (in Medicine.) A drink of a delightful taste, pleasant smell, and beautiful colour.

NECTARINE. A delicious sort of peach, having a smooth rind and a firm flesh.

NECTARY. The melliferous part of a vegetable.

NEEDLE. An instrument of steel for sewing, having a sharp point for piercing, and an eye to receive the thread; also, an instrument for knitting, which is a simple steel wire.

NEEDLE, or MAGNETICAL NEEDLE. A needle touched with the loadstone, and suspended on a pivot, on which, playing at liberty, it directs itself to the north and south of the horizon. Magnetical needles are called horizontal when balanced equally on both sides, and inclinatory or dipping when they are constructed so as to show the dip of the needle, or how far it points below the horizon.

NEGATIVE. An epithet for what implies negation.

NEGATIVE ELECTRICITY. That state of bodies in which they are deprived of some portion of the electricity which they naturally contain.

NEGATIVE PREGNANT (in Law.) A negative which implies an affirmation, as when a person denies having done a thing in a certain manner or at a certain time, as stated in the declaration, which implies that he did it in some manner.

NEGATIVE QUANTITIES (in Algebra.) Quantities having the negative sign set before them.

NEGATIVE SIGN (in Algebra.) A sign marked thus —, to denote less than nothing.

NEGOTIATION. The conducting a treaty either in political or commercial matters.

NEGROES. The black inhabitants of Africa, having woolly hair and a peculiar cast of countenance. Their low state of civilization enables their governments to seize and sell them for slaves, to perform the toils of nominal Christians in hot climates. Great exertions are now making by the Christian world for the total extinction of the slave trade, and the civilization of the African race. The English have a settlement at the Sierra Leone, on the western coast, and the American Colonization Society one at Liberia.

NEGUS. A well known compound beverage, prepared of one part of Port-wine and two parts of water, to which is usually added a small quantity of sugar, lemon-peel, &c. This liquor is pleasant, especially if the juice of a Seville orange be substituted for that of lemons.

NEM. CON. An abbreviation for nemine contradicente, that is, no one opposing, applied to the decisions of parliament and other public assemblies.

NEM. DISS. An abbreviation for nemine dissentiente, no one dissenting, that is, with unanimous consent.

NEPHRITE. A sort of stone of the talc kind, of a dark leek-green colour, verging to blue. It is found in China, America, and Egypt, and is highly prized by the Hindoos and Chinese, by whom it is made into talismans.

NEPHRITIC. Relating to the kidneys.

NE PLUS ULTRA, i. e. no farther. The extremity, or utmost extent to which any thing can go.

NEPTUNE. The god of the sea, brother

of Jupiter in the heathen mythology, who is known by his trident.

NERITA. A sort of testaceous worms, whose shells are adorned with a beautiful painting in miniature.

NERVES (in Anatomy.) Long white medullary cords, which pass in pairs from the brain and the spinal marrow, as instruments respectively of sensation and volition; of which nine pairs proceed from the brain, and thirty from the spine. They spread over the body like fine net-work.

NERVES (in Botany.) Long tough strings, which run lengthwise in the leaf of a plant.

NERVOUS. An epithet for what relates to the nerves, as, the nervous system, nervous disorders, &c.

NEST. The lodging prepared by birds for incubation and receiving their young.

NET. A device for catching either fish or fowl, formed by threads interlaced.

NETTINGS. Small ropes seized together gratewise with rope yarn, to stretch in different parts of a ship.

NETTLE. A stinging herb.

NET WEIGHT. See NEAT WEIGHT.

NEUROPTERA. An order of insects in the Linnæan system, including those which have the wings reticulate, as, the dragon fly, the day fly, the lion ant, &c.

NEUTRALIZATION (in Chemistry.) The process by which an acid and an alkali are so combined as to disguise each other's properties.

NEUTRAL SALTS. Salts which partake of the nature of both an acid and an alkali.

NEWSPAPER. A periodical publication, which appears once or oftener in the week, containing an account of the political and domestic occurrences of the time. It is capable of doing good or mischief, according as it is honestly or dishonestly, ignorantly or intelligently, conducted.

NEW STYLE, abbreviated N. S. The method of reckoning the days of the year in accordance with the Grégorian Calendar, which adjusts the odd hours and minutes, by which the earth's revolution exceeds 365 days, and renders celestial phenomena and terrestrial reckoning equal.

NEWT. An animal of the lizard tribe.

NEWTONIAN PHILOSOPHY. The doctrine of the universe as explained by Sir Isaac Newton, respecting the properties, laws, affections, forces, motions, &c. of bodies, both celestial and terrestrial. The chief parts of the Newtonian philosophy are explained by the author in his Principia, or Principles of Natural Philosophy.

NIAGARA FALLS. One of the most sublime natural curiosities on the globe. The river flows from south to north, and is 35 miles long. At its efflux from Lake Erie it is three quarters of a mile wide, from 40 to 60 feet deep, and flows with a current of 7 miles an hour. As it proceeds, the river expands to the width of 6 or 7 miles, embosoming several considerable islands, particularly Grand and Navy islands, which terminate in beautiful points a mile and a half above the falls. A little below the termination of these islands, commence the rapids, which extend a mile to the precipice, in which space the descent is 57 feet. At the precipice the river is three quarters of a

mile wide, and is divided by Goat Island into two channels; the channel between Goat Island and the eastern or United States shore, is also divided by a small island. Over the precipice the river falls perpendicularly about 160 feet. Much the greater part of the water passes in the channel between Goat Island and

the Canada shore, and this fall is called from its shape the Horse-shoe fall. Between Goat Island and the small island in the eastern channel, the stream is only 8 or 10 yards wide, forming a beautiful cascade. Between this small island and the United States shore, the sheet of water is broad, and the descent is greater by a few feet than at the Horse-shoe fall, but the stream is comparatively shallow. The falls are seen to advantage from different positions. The best single view is that from the Table rock, on the Canada side; and the best view of the rapids is from Goat Island, which is ingeniously connected by a bridge with the eastern shore. The view from the river below is the most entire. Below the falls, the river runs between perpendicular banks 300 feet high to Queenston, 7 miles; thence to Lake Ontario the country is open. About two miles below the falls is the Devil's hole, where the current is forced into a narrow bay bordered by high rocks, and forms a tremendous whirlpool.

NICENE CREED. A particular creed formed at the first general council assembled at the city of Nice by Constantine the Great, A. D. 315. This creed has since been adopted by the church of England.

NICKEL. A metallic substance, mostly found in a metallic state, but sometimes in that of an oxide. Its ores have a coppery red colour. It is nearly as hard as iron, and its specific gravity is eight or nine times greater than that of water. Nickel forms alloys with a number of metals.

NICKEL KUPFER, or the SULPHURET OF NICKEL. A compound of nickel, arsenic, and a sulphuret of iron.

NICTITANT MEMBRANE (in Comparative Anatomy.) A thin membrane chiefly found in birds and fishes, which covers the eyes of these animals, so as to shelter them from the dust and excess of light.

NIGHT. The period of darkness, being the time of the earth's rotation in which it is turned from the sun, and equal in minutes in the year to the days, though shortened by the twilight. At the poles there is but one day and one night in the year, and thence to the arctic circle, the days and nights are of months duration, according to the distance. At North Cape, for example, the longest day is six weeks. The longest night, at the distance of six months, is also six weeks, twilight excepted.

NIGHTHAWK. A bird resembling the whippoorwill, and generally supposed to be the same. They are, however, different birds. The nighthawk is often seen on summer evenings, with his long wings, flying high in the air, uttering a frequent plaintive cry, and occasionally sweeping downward with a rapid and almost perpendicular descent, and then, by the impulse of his flight, rising high again in the air. He lives on flies and gnats, and descends, as described above, with his mouth open, to catch the insects that may chance to come within his range.

NIGHTINGALE. A small brown bird, well known for the fineness of its tones, chiefly in the evening, equalled only by the sky-lark in sprightliness, compass, and execution; but the latter is greatly inferior in mellowness and plaintiveness, in which two qualities the wood-lark alone approaches the nightingale. Nightingales are birds of passage; they never unite in flocks, and their habitations are generally at a distance from each other. The female constructs her nest in low bushes or quickset hedges, well covered with foliage, in the vicinity of brooks; it is externally composed of dry leaves, mixed with grass and fibres, and lined with hair or down: here she deposits four or five olive-green eggs.

NIGHTMARE. A heavy, pressing sensation on the breast during the night, to which nervous persons are subject.

NIGHTSHADE, or DEADLY NIGHTSHADE. A poisonous plant, bearing a bell-shaped corolla, from the leaves of which painters extract a fine green.

NIHIL DICIT (in Law.) A failure on the part of the defendant to put in an answer to the plaintiff's declaration, &c. by which omission judgement is of course had against him.

NILGHAU, or NYLGHAU. The Persian name for a species of blue antelope, the ante-

lope picta of Linnæus, having short horns bent forward, and the upper and under parts of the neck maned.

NIMBUS (among Antiquarians.) A circle observed on some metals, or round the head of some emperors, answering to the circles of light drawn around the images of saints.

NISI PRIUS (in Law.) A writ which lies in cases where the jury being empannelled and returned before the justices of the bench, one of the parties requests to have this writ for the case of the county, that the cause may be tried before the justices of the same county.

NITRATES. Salts formed of nitric acid with salifiable bases, as the nitrate of potash, soda, &c.

NITRE, vulgarly called SALTPETRE. A neutral salt, being a crystallized, pellucid, and whitish substance, of an acrid and bitterish taste, impressing a strong sense of coldness on the tongue. It is found ready formed in the East Indies and in the southern parts of Europe, and in this country; but by far the greater part of the nitre in common use is produced by the combination of substances in suitable situations, which tend to produce nitric acid, particularly where animal matter becomes decomposed by the air, such as slaughter-houses, drains, and the like.

NITRIC ACID. A heavy, yellow liquid, procured by the chymical combination of oxygen and nitrogen gas. Diluted with the sulphuric and muriatic acids, it forms the well known liquid aquafortis.

NITROGEN, or AZOTE. A substance existing in great abundance, but never found except in combination with some other body. It is a principal component part of the air which we breathe, which consists of 78 parts of nitrogen, and 22 of oxygen. It is accordingly here united with oxygen, and a certain portion of caloric and light. The nitrogen and oxygen of the atmospheric air may be separated, so that we may have the nitrogen by itself, but then only in a state of gas, and its properties are very different from those of the atmospheric air. Nitrogen gas will not support animal life. It is a little heavier than atmospheric air, elastic, and capable of expansion and condensation. It produces no change on vegetable colours, and, when mixed with lime-water, does not make it milky, as does carbonic acid gas. Nitrogen gas and oxygen gas artificially mixed, in the proportions in which air is found in the atmosphere, have exactly the same properties as atmospheric air, which they become in every respect. All animal and vegetable substances contain a large proportion of nitrogen.

NITRO MURIATIC ACID. A compound of nitric and muriatic acids, formerly called aqua regia, which dissolves gold.

NITROUS ACID. An acid which has less of oxygen than the nitric acid.

NITROUS OXIDE OF AZOTE. A gaseous substance, best procured from nitrate of ammonia, which, if inhaled, produces an exhilirating and intoxicating effect.

NOBILITY. Those who hold a rank above the degree of a knight, and are distinguished from the commonalty in Europe by titles and privileges.

NOBLE. A coin, worth about one dollar and fifty cents, which was struck in the reign of Edward III.

NOCTANTER. By night.

NOCTURNAL. An epithet for what belongs to the night; as, a nocturnal arch, the arch described by a star in the night.

NOCTURNAL, or NOCTURLABIUM. An instrument used at sea for finding the latitude and hour of the night.

NODDY. A sea fowl of the tern kind.

NODE (in Surgery.) A hard tumour rising out of a bone.

NODE (in Dialling.) The axis or cock of a dial.

NODES (in Astronomy.) Two points where the orbit of a planet intersects the ecliptic; the Northern or Ascending Node, called the dragon's head, is marked thus, ☊, the Southern or Descending Node, the dragon's tail, marked thus, ☋.

NOLLE PROSEQUI. An agreement on the part of the plaintiff not to prosecute his suit.

NO MAN'S LAND. A sea term for the space in midships, between the after part of the belfry and the fore part of a ship's boat, when she is stowed upon the boom.

NOMENCLATURE. A catalogue of the most useful and significant words in any language or in any particular science.

NOMINATIVE (in Grammar.) The first case of a noun, or the name itself, the subject of a sentence which governs the verb.

NONAGESIMAL. The ninetieth degree of the ecliptic.

NONCHALANCE. An affected indifference.

NON COMPOS MENTIS (in Law.) Not of sound mind.

NON CONDUCTORS (in Electricity.) Bodies which do not become electric by being

placed in the neighbourhood of an excited body. The following substances are the principal electrics: Glass of all kinds; all precious stones, the most transparent the best; amber; sulphur; all resinous substances; wax, silk, and cotton; dry external animal substances, as, feathers, wool, and hair; paper; loaf sugar; air, when dry; oils and metallic oxides; ashes of animal and vegetable substances; and most hard stones.

NONCONFORMIST. A person not conforming to the church of England.

NON EST INVENTUS, i. e. literally, He has not been found. The answer made by the sheriff in the return of the writ, when the defendant is not to be found in his bailiwick.

NONPLUS. A difficulty or embarrassment, when one cannot proceed any way.

NON PROS. i. e. Non prosequitur, he does not prosecute. A nonsuit, or the form of renouncing or letting fall a suit by the plaintiff.

NONSUIT. A cause lost from some legal informality, by which the plaintiff is compelled to pay the costs.

NOON. Mid-day, or twelve o'clock; called apparent, as shown by the sundial, and real, as shown by a clock; for the clock is faster than the dial from December 24 to April 15, and from June 16 to August 31, and slower at other times, both agreeing only on those days. At other times the true day being respectively more or less than the twenty-four hours. The difference is given in every almanack, and the causes are the unequal motion of the earth, and the oblique course of the ecliptic, in regard to the equator.

NORMAL. A perpendicular.

NORTH POLE. A point in the northern hemisphere, ninety degrees distant from the equator.

NORWEGIAN. A native of Norway, which is a mountainous and barren country, abounding, notwithstanding, in sublime and beautiful scenery: the inhabitants are rude and illiterate, but honest and hospitable. Its exports are lumber, iron, copper, fish, and some silver. It is subject to the king of Sweden. It is remarkable for the maelstroom, a dreadful whirlpool, on its coast.

NOSOLOGY. A systematic arrangement and description of diseases.

NOSTRUM, i. e. Ours. The name given to the medicines offered by quacks as universal remedies.

NOTARY (in Law.) A scrivener who takes notes and draughts of contracts.

NOTARY PUBLIC (in Commerce.) A scrivener who witnesses deeds, in order to make them authentic in foreign courts.

NOTATION (in Arithmetic and Algebra.) The method of expressing numbers or quantities by signs or characters appropriated for that purpose. The Jews, Greeks, and Romans, expressed their numbers by the letters of their alphabet; the Arabians had particular characters, called figures, which have been universally adopted in Europe in all arithmetical operations. The Roman mode of notation is also still in use in marking dates or numbering chapters, &c.

NOTATION (in Music.) The manner of expressing sounds by characters.

NOTE. Any short writing or memorandum.

NOTE (in Music.) A character to distinguish the pitch and time of a sound.

NOTE OF HAND. A writing under a man's hand, by which one person engages to pay another a sum of money on a certain day; this may either be in the form of a bill or of a promissory note.

NOT GUILTY (in Law.) The general issue or plea of the defendant in a criminal action.

NOTICE (in Law.) The making something known that a man was or might be ignorant of, and which it was proper he should be made acquainted with.

NOV. An abbreviation for November.

NOVEL. A narrative of fictitious events and characters. When the incidents and persons are not probable, it is called a romance; and if only a short story, a novelette.

NOVEMBER. The eleventh month of the Julian year. It was called November because it was the ninth of Romulus' year.

NOVICE (in the Romish Church.) One who has entered his noviciate or year of probation, before he takes his vow; in a general sense, a learner in any profession, an unskilful person.

N. S. An abbreviation for new style, or the new mode of forming the calendar.

NOUN (in Grammar.) A part of speech, the name of the thing itself, as horse, dog, &c.

NUCLEUS. The kernel of a nut, &c.

NUCLEUS (in Astronomy.) The body of the comet, otherwise called the head.

NUDE CONTRACT. A bare, naked

contract, without a consideration, which is void in law.

NUISANCE (in Law.) Any annoyance which tends to the hurt or inconvenience of another.

NUMBER (in Arithmetic.) An assemblage of several units or of several things of the same kind. Whole numbers are otherwise called integers, as 1, 2, 3. Broken numbers are fractions, as $\frac{1}{4}$. Cardinal numbers express the number of things, as 1, 2, 3. Ordinal numbers denote the order of things, as 1st, 2d, 3d, &c. Even numbers are those which may be divided into two equal parts, without a fraction, as 6, 12, &c. Uneven numbers are such as leave a remainder after being divided, as 5, 13, &c. A square number is the product of any number multiplied by itself, as 4, the product of 2 multiplied by 2.

NUMBER (in Grammar.) An inflection or change of ending in nouns and verbs, to denote number. Numbers are singular to denote one, dual to denote two, or plural to denote more than one.

NUMBERS (in Poetry.) Measures or cadences which render a verse agreeable to the ear.

NUMERAL. Any character which expresses a number, as 1, 2, 3.

NUMERAL LETTERS. The Roman letters I. II. III. IV. &c. which denote numbers.

NUMERATION. The art of expressing in figures any number proposed in words, or expressing in words any number proposed in figures.

NUMERATOR. The number in the upper line of a fraction, denoting the number of the given parts taken, as 3 in $\frac{3}{4}$, that is three out of the four parts of an integer.

NUMERICAL. Relating to numbers, as numerical algebra, that which is performed by the help of numbers.

NUMISMATICS. The study of coins and medals of all nations, as means of history and rectification of dates in chronology. The earliest coins are Phenician, and were struck or imprinted from dies unreversed, so that the inscription was reversed. Greek coins are scarce, and so are many Roman ones; but, as money was often secreted under ground, pots of it are often discovered, containing coins of great rarity.

NUNCIO. The pope's ambassador.

NUNCUPATIVE WILL. A will made by word of mouth.

NUNNERY (in the Romish Church.) A religious house for nuns, or females who have bound themselves by vow to a single life.

NURSERY. A chamber for young children.

NURSERY. A place set apart for young trees and shrubs.

NUTATION (in Astronomy.) A tremulous motion of the earth's axis.

NUTGALLS. Excrescences on the leaf of the oak. The Aleppo galls are imported for the use of dyers, calico printers, &c.

NUTMEG. A spice, the fruit of a tree as large as a pear tree, growing on the island of Banda. The nutmeg is the kernel of the fruit, not unlike the peach, the rind or coat of which is called mace.

NUX VOMICA. A flat, compressed, round fruit, about the breadth of a shilling, brought from the East Indies; it is a certain poison for dogs, cats, &c. and is one of the ingredients unlawfully infused into beer, to give it a stupifying quality.

NYMPHÆ. The chrysalis, or third stage of insects, between the grub and the fly.

NYMPHS. The goddesses of the woods, according to the poets.

O.

O, the fourteenth letter of the alphabet, used as a numeral for eleven, and with a stroke over it, thus $\overline{O}$, for eleven thousand.

OAK. A tree celebrated for its timber, which is so tough that the sharpest tools will scarcely penetrate it. It is also remarkable for its slowness of growth, bulk, and longevity. Oaks have been found to grow only from fourteen to twenty inches in diameter in the space of eighty years.

OAKUM. Old ropes untwisted and made into loose hemp for calking ships.

OAR. A long pole with a flat thin end, by which boats are driven along in the water.

OATH (in Law.) A solemn affirmation accompanied with an invocation of God to witness what we say, and with an imprecation of his vengeance, or a renunciation of his favour, if what we affirm be false, or what we promise be not performed.

OATH OF ALLEGIANCE. The oath which the subject takes when required to bear true allegiance to a government.

OATH OF SUPREMACY. The oath which establishes the supremacy of the king over every other power, temporal or spiritual, in England, whereby the supremacy of the pope was renounced at the Reformation.

OATH OF ABJURATION. An oath which expressly establishes the succession of the reigning family to the throne of England, to the exclusion of the Stuart family or any other.

OATS. A grain, the peculiar food of horses, and in Scotland and the north of England also the food of man. Oatmeal, the flour of the oats, is also much used medicinally.

OBELISK (in Architecture.) A square stone growing smaller from the base to the summit.

OBELISK (among Printers.) A mark of reference, thus (†).

OBJECT-GLASS. A glass in a telescope or microscope at the end of the tube next to the object.

OBIT (in the Romish Church.) An annual service for the dead.

OBITUARY. A register of the deaths.

OBLATE. Flattened; an epithet for a sphere or spheroid. The oblateness of the earth refers to the diminution of the polar axis, in respect to the equatorial.

OBLATION. What is laid on an altar, or given at the altar, by way of offering.

OBLIGATION (in Law.) A bond containing a penalty on condition of not performing certain covenants annexed.

OBLIQUE. Deviating from a perpendicular line or direction, as an oblique angle, &c. that which is not a right one.

OBLIQUE CASES (in Grammar.) The cases of nouns declined from the nominative.

OBLIQUITY OF THE ECLIPTIC. The angle which the ecliptic makes with the equator, being now estimated at something less than 23 degrees 28 minutes, as the ecliptic approaches nearer to a parallelism with the equator at the rate of about 42 seconds in 100 years.

OBOLUS. A small Grecian coin; value near three cents.

OBSERVATION. The observing the phenomena of the heavenly bodies by means of any instrument.

OBSERVATORY. A place erected in some lofty situation, and fitted up with telescopes, quadrants, &c. for the purpose of making astronomical observations, such as the observatory at Greenwich, Paris, Munich, and Palermo, which are the most celebrated among the modern observatories. The ancient Chaldeans had also similar places.

OBSERVATORY EQUATORIAL, or PORTABLE. An instrument for solving many problems in astronomy, as finding the meridian, pointing the telescope on a star, though not in the meridian, in full daylight, &c.

OBSIDIONAL CROWN. A crown made of the grass that grew in a besieged place, which the Romans gave to the general by whom the town was taken.

OBT. An abbreviation for obedient.

OBTUSE ANGLE. Any angle greater than a right angle. See ANGLE.

OCCIDENT. Westward, as the occident equinoctial, &c.

OCCIPUT. The back part of the head.

OCCULTATION. The obscuration of any star or planet by the interposition of any other body, as the moon, &c.

OCCULTATION, CIRCLE OF. An imaginary circle round the poles, which contains those stars that are not visible in our hemisphere.

OCCULT DISEASES. Diseases the causes and treatment of which are not understood.

OCCULT QUALITIES. Qualities in bodies which do not admit of any rational explanation.

OCCUPATION (in Law.) The possession and use of lands or tenements.

OCEAN. A vast collection of salt and navigable waters, enclosing the continents or quarters of the globe, Europe, Asia, Africa, and America, and comprehended under the several divisions of the Atlantic, the Pacific, and the Indian Oceans, which cover three-fourths of the earth's surface, to an average depth, estimated at two miles, salt every where, owing to the solution of muriate of soda; but whether this is a constituent of sea-water, or whether the muriate of soda is a salt lying in beds, and dissolved by the ocean, is uncertain; but it proves useful in preventing putridity.

OCHRE. A sort of earth consisting of alumina and red oxide of iron.

OCTAGON. A figure of eight sides and angles.

OCTAHEDRON. One of the five regular bodies, consisting of eight equal and equilateral triangles.

OCTANDRIA (in Botany.) One of the Linnæan classes, consisting of plants having eight stamina to each flower.

OCTANT. An aspect of two planets when they are distant from each other 45 degrees, or the eighth part of a circle.

OCTAVE (in Music.) The eighth interval in a scale of sounds.

OCTAVO, i. e. in eight, expressed by printers thus, 8vo. The form of a page by folding a sheet into eight leaves, so as to make it consist of sixteen pages.

OCTOBER. The tenth month in the year, containing thirty-one days.

OCULIST. One who cures the disorders of the eyes.

ODD. An epithet for any number in the series of 1, 3, 5, 7, &c.

ODE. A poem written to be sung to music.

ODOUR. The scent or smell.

OEDEMA. Any tumour or swelling.

OESOPHAGUS. The gullet, a membranaceous canal, reaching from the fauces to the stomach, and conveying into it the food taken in at the mouth.

OFFENCE (in Law.) The violation of any law; this is capital if punished with death, and not capital if visited with any other punishment.

OFFICE. That function by virtue whereof a man hath some employment, either in the public affairs or those of a private individual.

OFFICER (in Law.) One filling an office or post under government.

OFFICER (in Military and Naval Affairs.) One acting under government in a military or naval capacity.

OFFICINAL. An epithet for what is sold in shops, as officinal plants, herbs, medicines, &c.

OFFING. The open sea, or that part of the sea at a distance from the shore, where there is deep water.

OFFSETS (in Botany.) Young shoots that spring and grow from shoots.

OFFSETS (in Surveying.) Perpendiculars let fall and measuring from the stationary lines to the hedge, fence, or extremity of an enclosure.

OGEE (in Architecture.) A moulding formed like the letter S.

OIL. A fat, unctuous substance, which derives its name from the olea, the olive, because it was at first principally known as the produce of the olive. Oils are distinguished by chemistry into volatile or essential oils, which have a strong acrid taste and a strong fragrant smell, being obtained from smelling plants and fixed oils, which are thick and viscid, insoluble in water, and do not boil under 600 degrees; these latter oils are obtained from both animal and vegetable substances, as train oil, olive oil, linseed oil, &c.

OIL GAS. A gas extracted from fish oil, which is more expensive and not reckoned so good as that procured from coals. If oil, tallow, or wax, be let fall upon red-hot iron, or made to pass through red-hot iron pipes, it will be resolved into combustible gas.

OLEIC ACID. An oil obtained from potass and hog's lard saponified, which has the property of saturating bases and forming natural compounds.

OLERACEÆ. One of the Linnæan natural orders of plants, containing potherbs, as spinage, thyme, mint, &c.

OLERON, LAWS OF. A code of maritime law, so called because it was framed by king Richard I. on an island off the coast of France.

OLFACTORY NERVES. The pair of nerves which proceed from the brain to the nose, and give the sense of smelling.

OLIGARCHY. A form of government wherein the administration of affairs is lodged in the hands of a few persons.

OLIVE TREE. A tree, native of the

southern parts of Europe, which rises with solid upright stems, and branches numerously on every side The olive, which is the fruit of this tree, yields an oil that is of an emollient and solvent nature, and is known by the name of olive or sweet oil.

OLYMPIAD. The space of four years, whereby the Greeks reckoned their time from the circumstance of the Olympic games having been celebrated once in four years. The first Olympiad is dated, according to some, 774 years before Christ.

OLYMPIC GAMES. Solemn games among the Greeks, in honour of Jupiter Olympus, at which five kinds of exercises were exhibited, namely, leaping, running, wrestling, quoiting, and whirlbats.

OMEGA. The last letter of the Greek alphabet.

OMENTUM. A double netlike membrane spread over the entrails.

OMER. A Hebrew measure about three pints and a half English.

OMNIPOTENCE. The almighty unlimited power of Deity. His infinite duration and continual presence is omnipresence; and his inconceivable knowledge and skill, is omniscience.

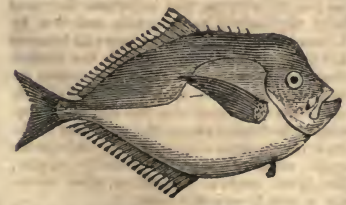
OMNIUM. A term among stockbrokers for all the kinds of stock, as 3 per cents, 4 per cents, &c. which are sold together as they were bought by the contractors from government.

ONION. A bulbous edible root, growing in gardens, and used for various culinary purposes.

ONYX. A precious stone, accounted a species of opaque agate. It is a semipellucid gem of different colours, but the bluish white kind is looked upon as the true onyx of the ancients.

OPACITY. That property in bodies by which they are rendered impervious to the rays of the sun, owing probably to the density of the parts.

OPAH. A large fish with a smooth skin, found on the coast of Guinea.



OPAL. A precious stone of various colours, which comes under the class of pellucid gems. It is found in many parts of Europe, especially in Hungary. When first dug out of the earth it is soft, but it hardens and diminishes in bulk by exposure to the air. The substance in which it is found is a ferruginous sand stone.

OPERA. A dramatic composition set to music. It is sung on the stage, accompanied and interspersed with dialogue.

OPERA-GLASS. A kind of glass constructed in a small wooden tube, so as to view a person in a theatre, and as the glass is made to point at a different object from that which is viewed, it may be used without any one knowing exactly who is observed.

OPERATION (in Surgery.) Any exercise of the surgical art which is performed by the use of instruments.

OPERATION (in Chymistry.) Any process that leads to a given result.

OPERATION (in Military Affairs.) Any movement of an army for the attainment of a particular object.

OPHTHALMIA. An inflammation of the membranes of the eye, a disease which particularly affected the English soldiers during their stay in Egypt.

OPIATE. A medicine made of opium.

OPIUM. The concentrated juice of the white poppy. It is imported in cakes from Persia, Arabia, and other warm climates; is of a reddish brown colour, and a nauseous bitter taste; and has a powerfully narcotic property. It is used by the Turks as a substitute for spirituous liquors and wine, which were prohibited by Mahomet.

OPOBALSAMUM, BALM OF GILEAD. A gummy juice of the balsam tree.

OPOPONAX. A gummy resinous juice obtained from the root of an umbelliferous plant growing in warm climates.

OPOSSUM. An animal chiefly found in America, that lives in holes and woody places. The female is remarkable for having two or three pouches, wherein the young conceal themselves in time of danger. It is about the size of a cat, with short legs, feet formed like hands, each having five fingers, with white crooked nails. It is slow on the ground, but climbs trees with great expedition. It feeds upon birds, and lives among the foliage to take them by surprise; it also frequently hangs by its tail to watch its prey.

Also, by means of its tail, it slings from tree to tree to hunt insects, and to escape from its pursuers.

OPPOSITION (in Astronomy.) One of the aspects of the planets, when they are 180 degrees distant from each other, that is, in a diametrically opposite relation to each other.

OPTATIVE (in Grammar.) A mode or form of a verb by which is expressed the wish or desire to do a thing.

OPTIC. Pertaining to the sight; as Optic Glasses, glasses contrived for viewing objects which cannot otherwise be seen, as spectacles, telescopes, microscopes, &c.

OPTICIAN. A dealer in or maker of optical instruments.

OPTIC NERVES. The second pair of nerves of the brain, which perforate the bulb of the eye, and serve for the sense of sight.

OPTIC PLACE OF A STAR. That point of its orbit in which it appears to be to our eye.

OPTIC PYRAMID. A pyramid formed by rays drawn from the several points of the perimeter to the eye.

OPTICS. That branch of natural philosophy which treats of the nature of light and colours, or of the general doctrine of vision. It is distinguished into three kinds: namely, optics, properly so called, which treats of direct vision; catoptrics, which treats of reflected vision, or that which is performed by means of rays reflected from speculums or mirrors; and dioptrics, which treats of refracted vision, or that which is performed by means of rays refracted or turned out of their course by passing through mediums of different densities, chiefly through glasses or lenses.

OPTICS, History of. The properties of light naturally attracted, at an early period, the attention of philosophers who made nature their study. Empedocles, who flourished upwards of four hundred years before Christ, is said to have written a treatise on light; and the works of Aristotle present us with a number of questions and observations concerning optical appearances. This philosopher was aware that it is the reflection of the light from the atmosphere which prevents total darkness after the sun sets, and in those places where he does not shine in the daytime. He also considered that rainbows, halos, and mock suns, were all occasioned by the reflection of the sunbeams in different circumstances, by which an imperfect image of his body was produced, the colour only, and not his proper figure, being exhibited. Euclid wrote a treatise on optics and catoptrics, in which he shows the chief properties of reflected rays in plane, convex, and concave surfaces, in a geometrical manner, beginning with that concerning the equality of the angles of incidence and reflection. He also takes some notice of dioptrics, and remarks on the effect of refraction in regard to an object at the bottom of a vessel, which, when water is poured in, is brought to view, that was not to be seen above the edge of the vessel before the water was poured in. As to the effect of burning glasses, both by reflection and refraction, this is noticed not only by Euclid, but by many other of the ancients; and, if we give credit to historians, the exploits performed by Archimedes in setting fire to the vessels of the Romans before Syracuse by means of burning mirrors, prove that his practical knowledge exceeded that of modern times. There is no doubt that he wrote a treatise on burning glasses, as also concerning the appearance of a ring or circle under the water, which shows that this phenomenon had not escaped his notice. The ancients were also acquainted with the production of colours by means of refracted light. Seneca observes that when the light of the sun shines through an angular piece of glass, it shows all the colours of the rainbow; also that the colours seen in a pigeon's neck, when it changes its position, are the effect of refraction, and on the same principle that a speculum, not having any colour of its own, will assume that of any other body.

Besides, the ancients were not unacquainted with the magnifying power of glass globes filled with water, for the ancient engravers used to employ such a glass globe, in order, as is supposed, to magnify the figures, that they might execute their work with more correctness. Ptolemy, who wrote a considerable treatise on optics, was well acquainted with the refraction of light, and determined the ratio of the angles of refraction, as compared with that of the angles of incidence, with such accuracy, that there is but a trifling difference between the results of his observations and those of Newton; not more than might arise from his having used glass and water of specific gravities something different from those employed by Newton. It appears also from this work of Ptolemy, as also from his Almagest, that he employed his knowledge of optics in his astronomical observations, for he was fully aware that refraction decreases from the horizon to the zenith, and that, by means of this refraction, the intervals between the stars appear less when near the horizon than in the meridian. He also accounts for the remarkably great apparent size of the sun and moon when seen near the horizon, by ascribing the appearance to the refraction of the rays by vapours, which actually enlarge the angle under which the luminaries appear, just as the angle is enlarged by which an object is seen from under water.

The next writer of any importance on the science of optics was Alhazen, an Arabian philosopher, who flourished in the twelfth century. He made many observations and experiments on the effects of refraction at the surface between air and water, air and glass,

and water and glass, from which he deduced that atmospherical refraction increases the altitudes of all objects in the heavens. He also first observed that the stars are sometimes seen above the horizon by means of refraction, when they are really below it; an observation confirmed by Vitellio and other opticians. He likewise maintained that refraction contracts the diameters and distances of heavenly bodies, and that it is the cause of the twinkling of the stars. Besides, Alhazen treats largely on the magnifying power of glasses, so that probably his observations led to the invention of spectacles. In the next century followed Vitellio, a Pole, who digested the contents of Alhazen's work, and made many additional observations on the power of refraction. He gave a table of the results of his experiments on the refracting power of air, water, and glass, corresponding to different angles of incidence. Roger Bacon, a contemporary with Vitellio, also wrote on this science, and is generally considered to be the inventor of the magic lantern. Maurolycus, who followed these two at the distance of nearly two centuries, explains, in his treatise De Lumine et Umbra, the process of vision, showing that the crystalline humour of the eye is a lens which collects the rays of light issuing from the objects, and throws them on the retina, where the focus of each pencil is formed. From this principle he discovered the reason why some people have a short sight and others a long one; also, why the former are assisted by concave glasses, and the latter by convex ones. John Baptista Porta, his contemporary, discovered the camera obscura, and took the first public notice of the magic lantern, the original invention of which has been ascribed to Roger Bacon. Kircher, who followed Baptista, enlarged on his hints, and put them into execution. He also made many experiments with the camera obscura, by which he satisfied himself that vision is performed by the intromission of something into the eye, and not by visual rays proceeding from it, as had been formerly imagined. He considered the eye as a camera obscura, the pupil to be the hole in the window shutter, and the crystalline humour to correspond to the wall which receives the images; but in this latter point his idea has been proved, by closer observations, to be incorrect, for it is now known that this office is performed by the retina. The observations and experiments of this writer on the science of optics, and on the nature of vision, appear to have led the way to the discovery of telescopes, which was doubtless made very soon after his time. After this, the writers on optics became very numerous, and their labours contributed to the confirmation and improvement of those who had preceded them. Among the works entitled to particular notice are Barrow's Optical Lectures, Huygen's Dioptrics, Hartsoeker's Essaie Dioptrique, David Gregory's Elements of Dioptrics and Catoptrics, Dr. Smith's Optics, Wolfius's Dioptrics and Catoptrics, Harris's Optics, but above all, Newton's Treatise on Optics, and his Optical Lectures.

OPTIME. A scholar in the first class of mathematics at Cambridge, England.

OR (in Heraldry.) The yellow or gold colour, represented on the escutcheon by small dots.

ORA. A Saxon coin, in value from 30 cents to 38 cents.

ORACLES (among the Heathens.) Ambiguous answers, which the priests pretended to deliver by the inspiration of their gods, such as the oracles of Apollo at Delphos, and those of Jupiter Ammon in Thebes.

ORANGE-TREE. An evergreen, resembling the laurel in its leaf. It is a native of the tropics, where it produces fruit throughout the year, the average annual crop of each tree being from 6000 to 8000. The orange-tree was transplanted from China into Europe by the Portuguese, about 1650, and now flourishes in Portugal, Spain, the south of France, the shores and islands of the Mediterranean, and in the West Indies.

ORATORY. The art by which a speaker is enabled to affect and convince his hearers; the first of which purposes is achieved by manner, gesture, modulation, and language;

and the last by logic, knowledge, and method; which last divides every perfect discourse into an exordium, a statement of the question, an illustrative narration, an exhibition of arguments in proof, a reply to objections, and a peroration.

ORB. A hollow sphere or space contained between two concentric spherical surfaces, as, the orb of the heavens.

ORBIT. The course of a planet in its passage round the sun, described with inconceivable rapidity; Mercury moving 109 thousand, and the Earth 68 thousand miles an hour. Orbits are elliptical, the longer axis being called the line of epsides, and the central sun being at unequal distances, the least distance being called the perihelion, and the greater the aphelion. The difference in the Earth is three millions and a quarter of miles, and in Mars twenty-seven millions.

ORBITS (in Anatomy.) The two large cavities in which the eyes are placed.

ORCHARD. A piece of ground planted with fruit trees. In planting an orchard great care should be taken that the soil is suitable to the trees transplanted in it, and that they are procured from a soil nearly of the same kind, or rather poorer than that laid out for an orchard. As to the situation, an easy, rising ground, open to the northeast, is to be preferred.

ORCHESTRA. The stage or middle of the theatre among the Greeks, where the chorus used to dance, and the performers used to sit. It is now the place set apart for the musicians, as the front of the stage in a theatre, a gallery in an assembly-room, &c.

ORCHEDEÆ. One of Linnæus' natural orders of plants, containing the orchis and other flowers allied to it.

ORDEAL. A Saxon mode of trial, which consisted in trying the guilt or innocence of persons by appeals to Heaven, as in the ordeal by fire, when the party accused undertook to walk blindfold between nine red-hot ploughshares; and if he or she escaped unhurt, it was looked upon as a proof of innocence: so, in the ordeal by water, when a person was thrown bound into a river, or put his hands or feet into scalding water, and the like.

ORDER (in Military Affairs,) as Order of Battle, the disposition of troops for battle; open order, close order, &c.; also, in the sense of command, as the commander in chief's orders, which issue immediately from the commander in chief's office; so brigade orders, general orders, standing orders, &c.

ORDER (in Naval Affairs.) Command, as sailing orders, &c.

ORDER (in Natural History.) A particular division of animals, plants, or minerals, comprehended under a class in the Linnæan and other systems.

ORDER (in Architecture.) The rule of proportion to be observed in the construction of any building, which is applied mostly to the column and the entablature, from the diversity in which have sprung the five several orders, namely, the Doric, Ionic, Corinthian, Tuscan, and Composite.

ORDER (in Geometry.) A rank or situation in a series of curves, lines, &c.; thus the first order of curve lines is expressed by a simple equation, or the first power; those of the second order, by a quadratic equation, or the second power; and so on.

ORDERS (in Law.) Rules made by the court in causes there depending.

ORDERS (in Ecclesiastical Affairs.) Congregations or societies of religious persons, who bind themselves by a vow to live under a superior, according to certain rules prescribed to them by their founder, such as the monks and nuns in the Romish church; likewise, the character and office by which ecclesiastics are distinguished, that are set apart for the ministry. Since the Reformation, there are three orders of the clergy acknowledged, namely, bishops, priests, and deacons; whence the phrase, 'to be in orders,' is the same as to be of the clerical order.

ORDERS OF KNIGHTHOOD (in Heraldry.) Societies of knights instituted by princes, as marks of distinction for such as have distinguished themselves in war. The British orders are the order of the Garter, and the order of the Bath, belonging to England; the Irish order of St. Patrick; and the Scotch order of the Thistle.

ORDINANCE. A law or decree.

ORDINARY (in the Navy.) The establishment of persons employed by government to take charge of the ships of war which are laid up in the harbours.

ORDINARY (in Heraldry.) Any charge in coats of arms which is proper to the art, and in ordinary use therein; as, the chief, pale, bend, fesse, bar, chevron, cross, and saltire, in distinction from the common charges, or such things as it has in common with the other arts, as animals, implements, crosses, &c.

ORDINATES (in Conic Sections.) Geometrical lines drawn parallel to each other, and cutting the curve in a certain number of points.

ORDINATION (in Ecclesiastical Affairs.) The act of ordaining, or putting into holy orders.

ORDNANCE. A general name for all sorts of great guns.

ORE. A general name for metals in an unrefined state, as they are dug out of the earth, where they are found in the four following states: namely, 1. Pure, that is, by themselves, in a pure metallic state, or as alloys, in combination with other metals: 2. As sulphurets, or in combination with sulphur: 3. As oxides, or in combination with oxygen: and, 4. As salts, that is, in combination with acids.

ORGAN (in Physiology.) An instrument by which any natural faculty in an animal body is exercised, as the ear, which is the organ of hearing; the eye, which is the organ of sight.

ORGAN (in Music.) A wind instrument blown by bellows, and containing numerous pipes of various kinds and dimensions, which, for its solemnity, grandeur, and rich volume of tone, is peculiarly fitted for the purposes for which it is commonly employed. Organs are sometimes of an immense size: the organ in the cathedral church at Ulm, in Germany, is said to be 93 feet high and 28 broad, its largest pipe being 13 inches in diameter, and it having sixteen pair of bellows.

ORGANIC REMAINS. A name applied to all those animal and vegetable substances which have been dug out of the earth in a mineralized state, and serve as strong evidences of the universal deluge, and the changes which ensued. See GEOLOGY.

ORIENT. The east or rising point.

ORIFICE. The mouth or entrance to any cavity in the animal body.

ORIGINAL. The first copy, or that from which any thing is first transcribed or translated.

ORION. A splendid constellation, conspicuous in our winter months, remarkable for three stars in a line, called Orion's belt, and containing, by Flamstead's Catalogue, 75 other stars; but the whole constellation contains above 2000.

ORNAMENTS (in Architecture.) Leaves, roses, channelings, and the like, which ornament the different parts of a column.

ORNITHOLOGY. That branch of Natural History which treats of birds, and their natures, habits, form, economy, and uses. Birds, in the Linnæan system, are divided, under the class Aves, into six orders, according to the form of their bills: as the Accipitres, including the eagle, vulture, hawk, &c.; Picæ, including the crow, jackdaw, parrot, &c.; Anseres, including the duck, goose, swan, gull, &c.; Grallæ, as the heron, woodcock, ostrich, &c.; Gallinæ, including the peacock, pheasant, turkey, domestic fowl, &c.; Passeres, including the sparrow, lark, swallow, &c.

ORNITHOLOGY, HISTORY OF. The only scientific writers on the subject of birds among the ancients were Aristotle and Pliny. The former of these writers speaks of the different kinds of food adapted to the different species, of which he gives an imperfect nomenclature, and adds some remarks on their various periods of building their nests. Pliny's remarks on birds are very desultory, and not very extended. The first writer among the moderns who has treated of birds methodically is Peter Belon, who has classed them principally according to their food and habitation. He has likewise added many observations on their external form and character. Conrad Gesner, his contemporary, has displayed much learning in his work, having given alphabetical tables of the names of birds in Hebrew, Chaldee, Arabic, Greek, and Latin, and numerous references to the writers from whom he collected his materials. Aldrovandus, the celebrated naturalist, followed in the steps of Belon and Gesner, and added much to their store of learning and research; at the same time illustrating the subject with numerous wood cuts. The next ornithologists of any distinction, after these three, were Willoughby and Ray, the latter of whom published the works of the former, his friend, with many additions of his own, in 1678. In this work, the external and internal structure of birds are described. Jacob Theodore Klein, in his History of Birds, divides them into families, orders, and tribes; the families distinguished according to their feet, the orders by the form of the bill, and the tribes by the form of the head, &c. In the systematic arrangement of Moehring, the classes, orders, and genera of birds are distinguished by the form of the feet and bill. The system of Linnæus, which follows here in order of time, is dated from the year 1766. It is formed from the manners and habits of the birds, as well as their external form (see ZOOLOGY.) Brisson, in his system of Ornithology, has distributed birds into twenty-six orders, from the form of the bill and feet, &c. including under these one hundred and fifteen genera, and thirteen hundred species The work, which is in six volumes 4to., is illustrated with more than two hundred and twenty excellent engravings. The work of Buffon, though popular, has but few claims to notice in a scientific point of view. Mr. Pennant, in his distribution of birds, prefers Ray to Linnæus; but Mr. Latham, in his Synopsis of Birds, adheres to the latter with very few exceptions, as does also Mr. Shaw, in his General Zoology.

Among the writers who have treated of the birds of particular places, the most distinguished are Juan Hernandez on the birds of Mexico; Marcgrave on the birds of Brazil; Sir Hans Sloane on the birds of Jamaica; Mr. Mark Catesby on the birds of Carolina, Florida, &c.; Schwenckfel on those of Siberia; Brunnick on those of Denmark; Sonnerat on those of New Guinea; Frisch on those of Germany; Valliant on those of the Cape, and Edwards on those of the West Indies.

ORNITHORUNCUS PARADOXUS. A singular quadruped from New South Wales, not yet properly classed in the Linnæan system. Its great peculiarity is that the structure of its head, externally and internally, bears greater resemblance to that of a duck than to that of any animal of the mammalia tribe.

ORPHAN. One bereaved of either father or mother, or of both parents.

ORPIMENT. A fine yellow powder; a mineral composed of arsenic in combination with about forty-three parts of sulphur, and is about thrice as heavy as water.

ORRERY. An astronomical instrument for exhibiting the several motions of the heavenly bodies. The first machine of this kind was constructed by Mr. Graham, but it derives its name from the Earl of Orrery, for whom one was made by Mr. Rowley; and Sir Richard Steele supposing this to be the first ever constructed, he gave it the above name in honour of the earl. Orreries are constructed so as to be more or less complete. That given in the accompanying figure has all the planets represented upon it; that is to say, the sun,

placed in the centre of the solar system; next to the sun is the orbit of Mercury; and next to that, the orbit of Venus. Next to the orbit of Venus, is the orbit of our earth, represented by a silver plate, on which the signs of the zodiac, the degrees of the ecliptic, and the days of each month are drawn; and the earth is represented by an ivory ball placed upon an axis, so as to make an angle with the plane of the horizon of 66 degrees and a half. About the ivory ball there is a silver circle, which is placed so as to incline to the earth's orbit in an angle of 8 degrees; this represents the orbit of the moon, the moon itself being represented by a silver ball. The superior planets are Mars, Jupiter, and Saturn, in this order: Mars stands next without our earth; next to that, Jupiter; and outermost of all, Saturn. By the handle, the revolutions of these planets are represented. While the earth is carried round the sun by 365 turns and a quarter of the handle, Mercury is carried round the sun in 88 turns, and Venus in 224; which represents that the length of the year in Mercury is 88 of our days, and the length of the year in Venus is equal to 224 of our days. Mars performs his revolution about the sun in 687 turns of the handle, Jupiter in 4332 turns, which answers to 4332 revolutions of our earth about its own axis; and last of all, Saturn, in 10759 turns, completes his revolution, which is the length of the Saturnian year, and is equal to about 30 of our years.

ORTHODROMICS. The art of sailing in the arc of a great circle.

ORTHOÉPY. Correct pronunciation.

ORTHOGRAPHIC PROJECTION OF THE SPHERE. That projection which is made upon a plane passing through the middle of the sphere, by an eye placed vertically at an infinite distance.

ORTHOGRAPHY. That part of grammar which teaches the nature and affections of letters, and the proper spelling or writing of words.

ORTHOGRAPHY (in Geometry.) The art of drawing or delineating the fore right plan of any object, and of expressing the heights or elevations of each part, so called from its determining things by perpendicular lines falling on the geometrical plan.

ORTHOGRAPHY (in Architecture.) The elevation or representation of the front of a building.

ORTOLAN. A delicate bird, of the bunting tribe.

ORYCTOLOGY. The science of organic remains.

OSCILLATION. The vibration of the pendulum of a clock.

OSCULATION. The contact between any curve and its osculatory circle.

OSIER. The red water-willow, of which wicker baskets are made.

OSIRIS. An Egyptian deity, usually worshipped in the form of an ox.

OSPREY. A bird of the eagle tribe, about the size of a turkey. Fish are its principal food. It is common in Europe and America.

OSSIFICATION. The formation of bones, or the hardening into a bony state.

OSTEOLOGY. The description of the bones.

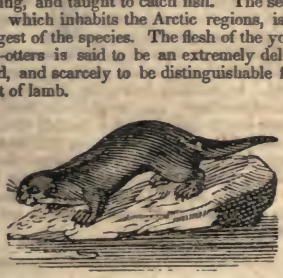
OSTRACISM. A mode of passing the sentence of banishment among the Athenians

by means of tiles, on which the name of the person to be banished was written.

OSTRACITIS. A kind of crust sticking to furnaces where the brass ore is melted.

OSTRICH. The largest of all birds, frequently weighing eighty pounds, being usually seven feet high from the top of the head to the ground, but from the back only four. It is a native of Africa, and lays forty or fifty eggs, which are as large as the head of a child.

OTTER. A sagacious animal, about two feet in length, and resembling the weasel in shape; it inhabits the banks of rivers, and feeds principally on fish. It has a tail half the length of its body, the fur of which is much esteemed. It is fierce and crafty when attacked, but may easily be tamed when young, and taught to catch fish. The sea otter, which inhabits the Arctic regions, is the largest of the species. The flesh of the young sea-otters is said to be an extremely delicate food, and scarcely to be distinguishable from that of lamb.



OVAL. An oblong curvilinear figure in the shape of an egg. The mathematical oval, which is a regular figure equally broad at each end, is called an ellipsis.

OVERT ACT (in Law.) A plain and open matter of fact, serving to prove a design.

OUNCE. In Avoirdupois weight, the sixteenth part of a pound; in Troy weight, the twelfth part; in Apothecaries' weight, equal to eight drams.

OUNCE (in Zoology.) An animal of the leopard kind, but smaller and milder than the other species. He is easily tamed, and is used in India for the chase, and is therefore sometimes called the hunting-leopard. He is a native of Asia and Africa.

OVOLO (in Architecture.) A convex moulding, the section of which is usually the quarter of a circle.

OURANG OUTANG. A species of ape, without a tail, resembling a man, but without organs of speech, or muscles of laughter.

OUTLAWRY. The being put out of the law or out of the protection of government. Outlaws were anciently called Friendless men, no one being permitted to take them in, or afford them any relief.

OUTRE. Extravagant, out of the way.

OUTRIDERS. Servants attached to any travelling equipage.

OWL. A bird which, on account of its weak sight, flies about in the dark, and lives principally on vermin. Some of the species have great horns, or long ears that look like horns.

OWYHEE, Idols of. These figures show the superstition and rude state of sculpture among the inhabitants of Owyhee, when first discovered by Cook. Missionaries have wonderfully improved the religious character of the natives of the Sandwich Islands.

OWYHEE, Queen of. The engraving represents the costume in which the queen and her daughter visited England in 1823, in

company with the king, where they all died, from excess, as was supposed.

OX. A well known domestic animal, of which there are several varieties, as the Abyssinian ox, having the horns pendulous, adhering only to the skin, and the African ox, having the body snowy, and hoofs black, &c.

OXALIC ACID. An acid extracted from wood sorrel, and also from sugar combined with potash. It forms the juice sold under the name of Salt of Lemons, which is used for taking out ink spots. Oxalic acid is a violent poison, and has in some cases been taken by mistake for Epsom salts.

OXIDATION, or OXYDIZEMENT. The process of converting metals or other substances into oxides by combining with them a certain portion of oxygen.

OXIDES, or OXYDES. Substances combined with oxygen, without being in the state of an acid.

OXYGEN. One of the constituent and essential parts of atmospheric or common air, which is necessary to the support of life and combustion. In its gaseous state, it is a colourless and aerial fluid. Oxygen forms about a fifth of our atmosphere, and exists in most vegetable and animal products, acids, salts, and oxides.

OXYMEL. A sirup made of honey, vinegar, and water, boiled together.

OYER AND TERMINER (in Law.) A court to hear and determine felonies and misdemeanours.

O YES (in Law.) Corrupted from the French 'oyez, hear ye,' the expression used by the crier of a court, in order to enjoin silence when any proclamation is made.

OYSTER. A shell fish, which abounds on the American coast, and is much esteemed as a food. In the East Indies the oysters grow to an extraordinary size, some of the shells being two feet in width; and it is said that on the coast of Coromandel, an oyster will furnish a meal for several men. At the same time it is universally agreed, that this large sort fall very far short of the European and American oyster in delicacy of flavour. There are 81 species.

P.

P, the fifteenth letter of the alphabet, stands as an abbreviation, in Music, for piano; in Astronomy, for post, as P. M. Post Meridiem, after noon; among physicians, for partes, as P. Æ. Partes Æquales, &c.; in English Law, for parliament, as M. P. Member of Parliament.

PACE. A measure of two feet and a half; with Geometricians, five feet.

PACHA. The chief admiral in the Turkish marine.

PAGANS. Those who adhered to idolatry after the establishment of Christianity; idolaters, or the worshippers of false gods. To their gods were given different attributes, ascribing to some every species of vice, and to others every virtue.

PAGE. A youth retained as an honourable attendant on a prince, to bear up trains, robes, &c.

PAGODA. A Chinese or Hindoo temple; also, an Indian coin worth about one dollar and seventy-eight cents.

PAINTED LADY. A beautiful variegated pea.

PAINTER. An artist who represents objects by colours, as a portrait painter; also, an artisan who lays colours on wood or stone, &c. as a house painter.

PAINTER (a Sea Term.) A rope for hauling a boat on shore.

PAINTER-STAINER. A painter of coats of arms.

PAINTING. The art of representing all objects of nature by lines and colours on a plane surface. In the exercise of this art, the powers of imagination, imitation, and invention, are required for making a choice of the subject, and of the several figures and subordinate parts of a picture, which are comprehended under the name of design. In the execution of the work, there are likewise required a due regard to the effects of light and shade, and colours, which is termed composition; and also a nice choice of the colours to be employed, which is known by the name of colouring. Painting, as regards the subjects, is distinguished into historical painting, portrait painting, landscape painting, &c.; as regards the form and the materials, into painting in oil, water colours, fresco, miniature, distemper, mosaic, &c.

PAINTING, HISTORY OF. It is to be supposed that painting was among the earliest efforts of human ingenuity, for the love of imitation would naturally suggest the idea of representing the surrounding objects which engaged the attention and interested the affections. Thus it is that the savages painted their own bodies, by means of puncturing the skin, and infusing different colours into the punctures, and that they painted on their shields different figures, according to the fancy of the bearer. So, likewise, we find that the Mexicans were in the habit of representing their warlike exploits by means of picture-writing, which were something similar to the hieroglyphics of the Egyptians, that served to represent sacred objects for religious purposes. The first step beyond the rude outline was an attempt to complete the imitation by applying colours, which at first was effected by covering the different parts of the figure with different colours, after the manner of our coloured maps, as was done by the Egyptians, and is still practised by the Indians and Chinese.

Painting was partially cultivated by the Egyptians, but was not carried to any perfection, because they principally employed themselves in the representation of the monstrous objects of their worship, rather than in depicturing natural or real objects: in consequence, their natural figures were very stiff and unseemly, the legs being drawn together, and the arms pasted to the sides, like the mummies which they copied. Their painters were likewise very much employed on earthen vessels or drinking cups, or in ornamenting barges, and covering with figures the chests of mummies. Pliny also informs us that the Egyptians painted the precious metals, which doubtless consisted in covering gold or silver with a single colour. The Persians, as well as the Arabians, had some idea of mosaic; but the art was cultivated by those people principally for domestic purposes. Among the Indians, painting is confined principally to the representation of their idols and monstrous objects of worship, but the painters of Thibet are remarkable for the delicacy of their strokes, in which they might vie with the Greeks, although deficient in every other particular. The Chinese are remarkable for the brightness of their colours, but this is the only perfection they can boast of. Their figures are as unlike nature as possible, devoid of expression and of proportion. The Etrurians were the first people who appear to have excelled in this art. Many specimens of Etruscan painting have been preserved, which consist of long painted frizes, and pilasters adorned with huge figures. The paintings are executed on a ground of thick mortar, and many of them are said to be in a high state of preservation. There are likewise many Campanian vases extant, which are wonderful proofs of the perfection of the art at a very early period among these people. As to the origin of painting among the Greeks, it is not easy to define the period of its commencement. The Greeks themselves, according to Pliny, speak of Polygnote as their first painter of eminence, who flourished in the 90th Olympiad, or 424 years before Christ. That painting in dry colours existed in the time of Homer is certain from several descriptions to be found in his Iliad and Odyssey: from the same source we also learn that they were then acquainted with basso relievo, of which the buckler of Achilles was a specimen. Polygnote was followed by Xeuxis and Parrhasias, whose skill in imitation is said to have been such, that he first deceived the birds by painting cherries so exactly, and the latter deceived his rival. Apelles, Protogenes, and Euphranor, contributed to raise the art to its highest perfection.

The Romans derived their skill in painting from Etruria, but the art remained very long neglected while the people were engaged in conquests, and struggles for liberty. From the building of the city to the time of the emperors, there is mention only of two who excelled in painting, namely, Fabius, surnamed Pictor, and Pacivius the nephew of the tragic poet Ennius. In the time of the emperors, painting, as well as the other arts, flourished. A colossean figure, 120 feet long, was painted by order of the Emperor Nero, which is the first painting on cloth mentioned among the ancients.

The artists who painted moveable pictures were superior to those who painted on ceilings,

or compartments of buildings. They painted their moveable pictures on the wood of the fir, larch, or box; or on canvass, as above mentioned. The old Greek and Roman paintings on walls are supposed to have been done in distemper or in fresco; they made use of oil in varnishing, for the preservation of their paintings, but they do not appear to have expressly used it in their colours.

After an interval during which all the arts languished, imperfect efforts were made to represent religious subjects, which paved the way for the revival of painting in the thirteenth century. A noble Florentine, named Cimabuc, first learned the art from a Greek, and cultivated it with success, so that he may be reckoned the founder of the Florentine school, of which Michael Angelo was the great ornament. Raphael was the founder of the Roman school; Titian, that of Venice. Corregio was the father and greatest ornament of the Lombard school, but the Caracci, Lewis, Augustin, and Hannibal, who were natives of Bologna, also formed a school, which has been called the second Lombard school.

Among the French, miniature painting, and painting on glass, were cultivated at an early period; but other branches of the art were at a low ebb until the age of Louis XIII., when Poussin arrived at such eminence as to be called the Raphael of France; but he had no pupils, nor any influence in forming the French school, the honour of which was divided between Vouet, who laid the foundation, and Le Brun, who raised the edifice. The Germans have never cultivated painting, so as to form a school, but Albert Durer and John Holbein have secured this nation from being forgotten in a history of painting. The Flemish school is remarkable for having introduced oil painting, which was first attempted, or at least brought into general practice, by John de Bruges; but the master of the art was Rubens, the founder of the Flemish school. The Dutch have distinguished themselves in miniature painting, of which Rembrandt was their great master, and also as history painters, among whom Lucas, of Leyden, holds the first rank, and may be considered as the founder of the Dutch school. The English school is comparatively of modern date, and owns Sir Joshua Reynolds as its founder. It is principally known by its correct observance of the great masters of the Italian and Flemish schools.

PALACE. A royal dwelling, so called from the Mount Palatine in Rome, where stood the royal mansion.

PALÆOGRAPHY. A description of ancient writings, inscriptions, characters, &c.

PALÆSTRA. A building where the Grecian youth exercised themselves in wrestling, running, quoits, &c.

PALANQUIN. An Indian covered chair, borne on men's shoulders.

PALATE. The roof of the mouth, and organ of taste.

PALE (in Heraldry.) One of the honourable ordinaries in a coat of arms, resembling a palisado used in fortifications.

PALE. A flat pointed stake, which is used in making enclosures.

PALISADE. A finer kind of paling in gardens.

PALISADOES, or PALISADES (in Fortification.) An enclosure of stakes, used to fortify the avenues of open forts, &c. They were sometimes so ordered that they would turn up and down as occasion required, and might be hidden from the view of the enemy until he came to the attack.

PALLADIUM. This is a new metal, first found by Dr. Wollaston associated with platina, among the grains of which he supposes its ore to exist, or an alloy of it with iridium and osmium, scarcely distinguishable from the crude platina, though it is harder and lighter. Palladium is of a grayish white colour, and takes a good polish. It is ductile, and very malleable, and being beaten into thin slips, inflexible, but very elastic. Its fracture is fibrous and in diverging striæ, showing a kind of crystallized arrangement. In hardness it is superior to wrought iron. Its specific gravity is from 10-9 to 11-8.

PALLAS. A small newly discovered planet, situated between the orbits of Mars and Jupiter, 266 millions of miles from the sun, with a period of four years, seven months, and eleven days. One of the four Asteroids.

PALLET. A painters colour board.

PALLET (among Gilders.) A tool for taking up the gold leaf.

PALLET (among Mariners.) A partition in a hold.

PALLET (in Heraldry.) The diminutive of the pale, being one half of its breadth.

PALLET-BED. A small low bed.

PALLETS. Levers in clocks and watches, connected with the pendulum or balance, which receive the immediate impulse of the wheel.

PALL-MALL. An ancient game, in which an iron ball was struck with a mallet through a ring or arch of iron.

PALM. A tree of different kinds, the branches of which were carried in token of victory.

PALM (in Commerce.) A measure of three inches.

PALM. A sea term for the broad part of an anchor.

PALM (in Anatomy.) The inner part of the hand.

PALMÆ. Palms; one of the seven families into which Linnæus divided the vegetable kingdom, consisting of trees and shrubs, with a stem, bearing leaves at the top, being the most magnificent specimens of the vegetable kingdom, of which the date is one.

PALMER. A pilgrim bearing a staff.

PALMISTRY. A mode of telling fortunes by the lines of the hand.

PALM-OIL. The oil of a tree, a native of South America, and the western coast of Africa, from the kernels of whose fruit a rich oil is obtained. It is used as a substitute for tallow in the manufacture of yellow or brown soap, which it resembles in colour; in our temperature it is of the consistence of grease, and emits an agreeable fragrance.

PALM SUNDAY. The sixth Sunday in Lent, the next before Easter, commemorative of our Saviour's triumphal entrance into Jerusalem, when palm branches were strewed in the way.

PALM WORM. A poisonous insect of South America. This insect is extremely swift in its motions.

PALPITATION OF THE HEART. A violent and irregular action of that muscle, accompanied with great uneasiness, and oppression of the breast.

PALSY, or PARALYSIS. A privation of motion or sense of feeling; a nervous disorder, arising from an affection of the cerebellum.

PAN. The god of mountains, woods, and shepherds, who was said to be the son of Mercury, and the inventor of the Pandean pipes. He is represented as a monster, with horns on his head, and the legs and feet of a goat.

PANACEA. A universal remedy for the cure of all disorders.

PANADA. Bread pap.

PANATHENÆA. A festival celebrated at Athens in honour of Minerva.

PANCRATIUM. An exercise among the ancients, which conisted in wrestling, boxing, and kicking at the same time.

PANCREAS (in Anatomy.) A flat glandular viscus of the abdomen; in animals called the sweetbread.

PANCREATIC. Belonging to the pancreas, as the pancreatic duct and juice.

PANDECTS. The name of a volume of the civil law, digested by order of the emperor Justinian.

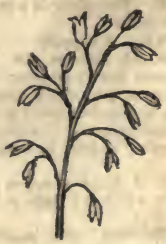
PANDORA. The first woman according to the poets, made by Jupiter. She presented her husband Epimetheus with a box, the gift of Jupiter, and on his opening it there flew out all kinds of evils on the earth.

PANE. A square of glass.

PANEGYRIC. A set speech among the ancients in praise of any one; in the Greek Church, a book of praises of Jesus Christ and the saints.

PANEL, or PANNEL. A schedule or roll of parchment on which are written the names of the jurors returned by the sheriff.

PANICAL (in Botany.) A sort of inflo-



rescence or flowering, in which the flowers and fruits are scattered on peduncles variously subdivided, as in oats, and some grasses.

PANNADE. The curvetting or prancing of a mettlesome horse.

PANNAGE. The feeding of swine upon mast in woods.

PANNEL (among Joiners.) A square piece of wood grooved in a larger or thicker piece, as in wainscots, &c.

PANNEL (among Masons.) One of the faces of a hewn stone.

PANNEL (in the Manege.) A saddle used in carrying burdens.

PANNEL (in the Scotch Law.) The prisoner at the bar.

PANNIER. A basket for carrying bread on horseback.

PANORAMA. A circular picture on a large scale, fixed around a room particularly constructed for the purpose.

PANOPLY. Complete armour.

PANTALOONS. A garment consisting of breeches and stockings of the same stuff fastened together.

PANTHEON. A temple at Rome, dedicated to all the heathen deities; a book containing an account of all the heathen gods and goddesses, &c.

PANTHER. A fierce beast nearly allied to the tiger, a native of Africa. It is of a tawny yellow colour, marked with black spots.

PANTLER. The officer in a great family who keeps the bread.

PANTOFLE. A slipper.

PANTOMIME (among the Ancients.) Antic dances and mimic gesture; among the Moderns, a sort of drama represented by gestures, actions, and various kinds of tricks performed by Harlequin and Columbine as the hero and heroine, assisted by Pantaloon and his clown.

PANTRY. A bread closet, or properly a small room in which the daily provisions of the table are kept.

PAPAL CROWN. The pope's tiara or crown, otherwise called the Triple Crown, because it is a cap of silk environed with three crowns of gold, as in the subjoined figure.

PAPER. A vegetable substance manufactured so as to be fit for writing upon. The Egyptian paper was made of the rush papyrus, which gave its name to the substance. Paper is likewise made of bark or the inner rind of trees, of cotton and other materials, but more particularly of linen rags prepared by a particular process at the paper mills. Paper is distinguished as to its use into writing paper, printing paper, drawing paper, cartridge paper, copy, chancery, &c.; as to its size, into pot, foolscap, crown, demy, medium, royal, imperial, &c. The engraving represents the vat, in which the materials used in making paper are in a pulpy liquid, and the man is in the act of dipping the mould, (which is the size of a sheet of paper,) made of fine wire, into it. The liquid drains through the wire, leaving the pulp in a consistent form, after which it is gradually dried, picked, and pressed, by a succession of women and children.

PAPER (among Bankers.) A name given to money of credit by means of any written paper, as bills of exchange, promissory notes, &c.

PAPER CURRENCY, or PAPER MONEY. A substitute for coin, in the shape of bank notes.

PAPIER MACHE. A substance made of paper boiled into a paste, of which toys are formed.

PAPILIONACEÆ (in Botany.) One of Linnæus' natural orders of plants, consisting of such as have papilionaceous or butterfly shaped flowers, as the pea, &c.

PAPIST (in Law.) One professing the Roman Catholic religion. Severe laws were made in England, after the Reformation, against the Papists, as they were techincally termed, but they have since been repealed, as the necessity for them ceased.

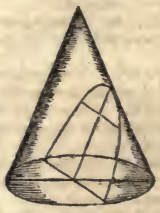
PAPYRUS. An Egyptian reed grass, the leaves of which were made into paper. It grows in the marshes of Egypt or in the stagnant places of the Nile. Its roots are tortuous, and in thickness about four or five inches; its stem, which is triangular and tapering, rises to the height of ten cubits, and carries a top or plume of small hairs.

PAPPUS (in Botany.) A sort of feathery or hairy crown, with which many seeds are furnished for the purpose of dissemination.

PAR. An equality between the exchanges of different countries.

PARABLE. An allegorical instruction, founded on something real or apparent in nature or history, from which a moral is drawn.

PARABOLA (in Conic Sections.) A curve made by cutting a cone by a plane parallel to one of its sides, or parallel to a plane that touches one side of the cone.



PARACHUTE. An instrument in the shape of an umbrella which serves to break the fall in descending from an air balloon.

PARADE. The place where troops draw up to do duty.

PARADIGM (in Grammar.) An example of a Greek or Hebrew verb conjugated through all its moods and tenses.

PARADISE. The garden of Eden, where Adam and Eve dwelt in their state of innocence.

PARADISE, BIRD OF. A bird of a beautiful plumage, that chiefly inhabits New Guinea, and migrates to the neighbouring islands. Its feathers are much used as ornaments for

the head among the Japanese, Chinese, and Persians.

PARADISE, Grains of. The hot berries or seeds of the cardamum.

PARADOX. An opinion apparently absurd or contradictory, although sometimes true in fact.

PARAGRAPH. A collection of sentences comprehended between one break and another.

PARALLAX. A change in the apparent place of any heavenly body when seen from different points of view.

PARALLEL (in Mathematics.) The name for lines, surfaces, or bodies every where at an equal distance from each other.

PARALLELOGRAM. A plane figure, bounded by four right lines, whereof the opposite are parallel and equal to one another.

PARALLEL SPHERE (in Astronomy.) The situation of the sphere when the equator coincides with the horizon, and the poles with the zenith and nadir.

PARALYSIS. The palsy.

PARAPET. A wall breast high that serves to hide the roof of a house.

PARAPHRASE. An explanation of any text in plainer and more ample terms.

PARASELENE. A mock moon, or a meteor in the form of a luminous ring round the moon.

PARASITE (among the Ancients.) A guest invited by the priest to eat of the sacrifice; a trencher friend or hanger on at the tables of the great, who lives by flattery.

PARASITICAL PLANTS. Such as grow upon others, like the moss or misseltoe.

PARASOL. A little moveable machine or small umbrella used by ladies for keeping off the sun.

PARCÆ, the Fates. Three sisters among the heathens, who presided over or spun the lives of men; Clotho held the distaff and spun the thread, Lachesis turned the wheel, and Atropos cut the thread.

PARCHMENT. The skin of sheep or goats prepared for writing upon.

PARDON (in Law.) The remitting the punishment for any felony committed against the state.

PARENTHESIS (in Grammar.) A clause inserted in the middle of a sentence, and marked thus [,] or thus (.)

PARHELION. A mock sun.

PARIAN MARBLE. A sort of white marble, so called from the island of Paros where it was first found.

PARIS. The son of Priam king of Troy, who, carrying away Helen the wife of Menelaus, was the author of the Trojan war.

PARIS, Plaster of. Burnt gypsum, which, after being finely pulverized, is used in making casts and moulds.

PARK (in Law.) An enclosure stocked with wild beasts of chase.

PARLIAMENT. The great council of the English nation, consisting of the King, Lords and Commons, which forms the legislative branch of that government. The parliament is assembled annually by summons from the crown, to make laws, impose taxes, and deliberate on other public affairs, either of domestic or foreign policy. The Parliament is also styled the High Court of Parliament, because the upper house assists in the administration as well as in the making of laws.

PARMESAN. A sort of cheese made at Parma in Italy.

PARNASSUS. A mountain of Phocis, on which stood the temple and town of Delphi. It was sacred to Apollo and the Muses.

PARODY. A poetical pleasantry which consists in applying the verses of some person by way of ridicule to another object, or in turning a serious work into burlesque by affecting to observe the same rhymes, words, and cadences.

PAROL (in Law.) By word of mouth, as parol evidence.

PAROLE (in Military Affairs.) Word of honour, a promise given by a prisoner of war, when suffered to be at large, that he will return at a time appointed.

PAROQUET. A small species of parrot, with beautiful green and yellow plumage. It is common in the western parts of the United States.

PARRICIDE. A murderer of father or mother.

PARROT. A genus of tropical birds well

known for the beauty of their plumage, and their ready imitation of the human voice. The ash-coloured parrot, found on the coast of Guinea, is commonly brought to Europe, as it speaks most readily. The tongue resembles that of a man, and the formation of the throat, and cavity of the beak, contribute to its articulation.

PARRYING (among Fencers.) The warding a push or blow from an adversary.

PARSING (in Grammar.) Expounding words and sentences so as to apply the rules of grammar to them.

PARSLEY. A potherb, and a perennial, which grows in gardens.

PART (in Arithmetic.) A quantity contained in a whole.

PART (in Music.) A piece of the score or partition, written by itself for the convenience of the musician.

PART (in the Drama.) The character or portion of a piece assigned to a performer.

PARTERRE. An open part of a garden in the front of a house, commonly ornamented with flowers.

PARTHENON. A temple at Athens, sacred to Minerva.

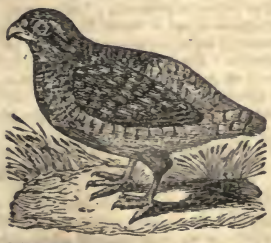
PARTICIPLE (in Grammar.) One of the parts of speech, so called because it partakes both of the noun and the verb.

PARTICLE (in Physiology.) A minute part of any body which enters into its composition.

PARTICLE (in Grammar.) Small indeclinable words that serve to unite or connect others together.

PARTITION (in Law.) Dividing lands or tenements among coheirs or parceners.

PARTRIDGE. A bird of game which abounds in Europe and America, and is highly esteemed for its flesh.



PARTS OF SPEECH. The grammatical division of words according to their connexion with or dependence upon each other; they are commonly reckoned nine in number, namely, the article, noun, pronoun, verb, participle, adverb, conjunction, preposition, and interjection.

PARTY (in Military Affairs.) A small detachment or number of men sent upon any particular duty, as a recruiting party, &c.

PARTY (in Public Affairs.) Any number of men combining together to follow their own particular views, either in politics or religion.

PARTY-WALLS. Partitions of brick made between buildings separately occupied, to prevent the spreading of fire.

PASQUINADE. A short satirical libel that is generally stuck up to be read by the passers by.

PASS (in Military Affairs.) A straight narrow passage, which renders the entrance into a country difficult for an army.

PASSAGE (in Muzic.) A succession of sounds forming a member or phrase in a composition.

PASSAIC FALLS. A fall of water in the river of the same name, at Paterson, New Jersey, the greatest curiosity in the state. The river is 40 yards wide, and falls nearly 70 feet, in one sheet of water, presenting a scene of singular beauty and grandeur. It affords fine situations for manufactories of various kinds.

PASSERES. An order of birds in the Linnæan system, comprehending such as have the bill conic and pointed, as the pigeon, the lark, the thrush, &c.

PASSION WEEK. The week immediately before Easter.

PASSIVE. Suffering, an epithet for verbs which express the suffering or being acted upon, as, 'to be loved.'

PASSIVE PRINCIPLES (in Chymistry.)

Earth and water, so called because their parts are not so swiftly moved as those of spirits, oil, and salt.

PASSOVER. A festival of the Jews, commemorative of the angels passing the doors of the Israelites when they slew all the first born of the Egyptians.

PASSPORT, or PASS. A license or letter from a prince or governor granting liberty to a person to pass through the country.

PASS WORD. A secret word or countersign, which enables any person to go through military stations.

PASTE (in the Glass Trade.) A kind of coloured glass made of calcined crystal, lead, and metallic preparations, so as to imitate gems.

PASTEBOARD. A thick kind of paper formed of several sheets pasted one over the other.

PASTIL. A sweet ball or perfumed composition.

PASTIL (among Painters.) A roll of paste made up of various colours with gum; a crayon.

PASTORAL. A shepherd's song or poem, by way of dialogue between shepherds.

PASTURE LAND. Land reserved for the feeding of cattle.

PATENTS, or LETTERS PATENT. Writings from a government, which grants to an inventor the exclusive manufacture of a particular article, or subject of invention.

PATERNOSTER. The Lord's prayer; also, the repetition of the Lord's prayer in the Romish church.

PATHOLOGY. That branch of medicine which explains the symptoms of diseases.

PATHOS. The emotion which an orator displays in his speech or excites in his hearers.

PATIENT. One who is under the direction of a physician for the cure of any disorder.

PATIENT (in Physiology.) That which receives impressions from any other thing called the agent.

PATRIARCH. The father or ruler of a family, such as Abraham and the patriarchs of old.

PATRIARCH (in Ecclesiastical Affairs.) A bishop that is superior to an archbishop.

PATRIMONY (in Law.) A right or estate inherited from ancestors.

PATRIOT. A father of his country.

PATROL. Any party going their rounds at stated hours, to observe what passes.

PATRON (in Law.) A friend of interest or power; he who has the disposal of a benefice.

PATRONYMIC. A name derived from one's father or ancestors.

PAVEMENT. A layer of stone or bricks, which serves to cover the ground and form a path or road.

PAVILION. A large tent raised on posts to lodge under in summer time.

PAUSE (in Music.) A character of time, denoting that the note must be drawn out to a greater length.

PAWN (in Commerce.) A pledge given by way of security for the payment of a sum of money.

PAWN (in Chess.) One of the common men.

PAWNBROKER. One who lends money upon goods left in pledge.

PAY. What is allowed to each individual in the army. Full pay is the full allowance; half pay, that which is allowed to officers on their retiring from the service.

PAYING. A sea term for anointing a mast, yard, &c. with tar, pitch, turpentine, &c.

PAYING OFF. A sea term for letting a ship's head fall to leeward of the point whither it was previously directed.

PAYMASTER. He who has the charge of paying a regiment.

PEA. A fine edible kind of pulse. Beside their utility for culinary purposes, peas, when harvested dry, and ground into meal, are uncommonly serviceable for fattening hogs, as no other grain agrees better with those animals. If the straw be forward in autumn, and has been housed without injury, it will be little inferior to ordinary hay, and afford a very useful article of fodder, on which every kind of cattle will thrive: and, though it be apt to occasion gripes in horses, if given to them before the month of January, yet such effects may be corrected, by allowing a few turnips, cabbages, or potatoes, either with or after they have eaten the pea-straw. In common with all other leguminous fruits, peas possess a strong mucilage, with an earthy basis, and yield a very solid nourishment to persons of vigorous stomachs; but pulse of every description is apt to excite flatulency and costiveness, if eaten too frequently, or in too large quantities. On the other hand, peas boiled in a fresh or green state, are equally wholesome and agreeable, being less flatulent, and more easily digested, than after they have attained maturity.

PEACE ESTABLISHMENT. The number of effective men required in the army and navy during peace.

PEACH. A rich, delicious, juicy fruit, highly and deservedly esteemed at table, as an article in our desserts; and when ripe and fresh, is grateful and wholesome, seldom disagreeing with the stomach, unless this organ be not in a healthy state, or the fruit has been eaten to excess. The kernels yield a salubrious bitter. The flowers, which are very beautiful, and appear only in spring, emit an agreeable odour, have a bitterish taste, and, including the calyx as well as the corolla, are used for medicinal purposes. The leaves are occa-

sionally employed in cookery, but they ought not to be used without great caution, on account of their injurious qualities.

PEACOCK. A well known domestic bird, remarkable for the beauty of its tail, and the harshness of its cry.

PEAK (in Geography.) A mountain or elevation with a sharp summit, as the Peak of Teneriffe.

PEAK (among Mariners.) The upper corner of sails which are extended by a gaff or by a yard, which crosses the mast obliquely.

PEAR. A well known tree, which yields a great variety of fruit, as the musk, muscadel, rose, bergamot, bury pear, &c.

PEARL. A concretion found in several shells, as in some species of the oyster and mussel. Pearls are of a silvery or blueish white colour, and very brilliant. They are supposed to be produced by a distemper in the animal, similar to the stone in man; they are formed, however, of the same matter as the inner shell, and consist of layers one over another, after the manner of an onion.

PEARL, Mother of. The shell of another species of oyster, not the pearl oyster. It is extremely smooth, and as white as the pearl.

PEARLASH. Potash calcined or cleared of its impurities by fire.

PEARL BARLEY. The seed of common barley, with the outer husk taken off; it is sometimes used medicinally.

PEAT. A sort of fuel dug out of the earth. It is the remains of decayed vegetables, as leaves, stringy fibres, the wood of decayed trunks of trees. &c. It is found in low valleys and bogs in Great Britain and other parts of Europe, and in America.

PEBBLES. A sort of fossils distinguished from flints by having a variety of colours.

PECK. A dry measure, the fourth part of a bushel.

PECORA. An order of animals in the Linnæan system, under the class mammalia, comprehending such as have the feet hoofed and cloven, and live on grass, and chew the cud, and have four stomachs, as the antelope, the camel, cameleopard, stag, musk, sheep, ox, cow, &c.

PECTORAL. Relating to the breast, as pectoral medicines, medicines good for curing diseases in the breast.

PEDANTRY. A needless or ill timed display of learning.

PEDESTAL. The lowest part of a column.

PEDIMENT. A low pinnacle, serving to crown a frontispiece, &c.

PEDOMETER. See Perambulator.

PEER (in English Law.) An equal, or one of the same rank and condition, formerly applied to the vassals or tenants of the same lord; and now applied to those who are empannelled in an inquest upon a man accused of any offence, who by the criminal law ought to be peers or equals of the person accused.

PEERESS. The lady of a peer.

PEERS OF THE REALM. The nobility of England, who, though distinguished by the different titles of duke, marquis, earl, viscount, and baron, are nevertheless all peers or equals in their political character as lords of parliament.

PEGASUS (in the Heathen Mythology.) A winged horse, on which Bellerophon is fabled to have ridden.

PEGASUS (in Astronomy.) A constellation in the northern hemisphere, containing from 20 to 89 stars, according to different writers.

PELICAN. A large bird inhabiting the Caspian and Black Seas, the bill of which is straight, except at the point. One species has

a skin reaching from the point of the bill to the neck, which forms a pouch capable of holding many quarts of water; another, called the cormorant, is used by the Chinese to catch fish, which a ring round the neck prevents its swallowing; and another, the gannet, is so numerous in the western islands of Scotland, that the inhabitants live on them and their eggs. The pelican has a peculiar tenderness for its young, and has been supposed to draw blood from its breast for their support.

PELLICLE. A thin skinlike substance found in egg-shells, and other animal productions.

PELT. The skin or hide of an animal.

PELVIS (in Anatomy.) The lower part of the abdomen.

PEN (in Husbandry.) A fold or enclosure for sheep, &c.

PENAL LAWS. Laws made for the punishment of criminal offences.

PENALTY (in Law.) A fine or forfeiture by way of punishment.

PENANCE (in Ecclesiastical Law.) An infliction of some pain or bodily suffering as an exercise of repentance for some sin, either voluntary, or imposed by the priest in the Romish church.

PENATES. The household gods of the Romans.

PENCIL. An instrument used in drawing and painting.

PENCIL OF RAYS (in Optics.) A number of rays diverging from some luminous point, which after falling upon and passing through a lens, converge again on entering the eye.

PENDANT. A sea term for a narrow banner or streamer. The broad pendant is a flag that serves to distinguish the chief of a squadron.

PENDULUM. A heavy body so suspended that it may vibrate or swing backwards and forwards.

PENETRATION OF BODIES. A term in philosophy, denoting that the parts of one body occupy the interstices between the parts of another.

PENINSULA. A place almost surrounded with water, except where it is joined with the continent by a neck of land.

PENITENTIARY. The name of a prison where felons are kept to hard labour.

PENMAN. One skilled in the use of the pen, particularly in fine kinds of writing.

PENNY POST. A person who conveys letters to different parts of a metropolis for a penny. The price being raised to twopence, it is now called the twopenny post.

PENNYROYAL. A pungent herb used in medicine.

PENNYWEIGHT. An English troy weight, marked thus, dwt., containing 24 grains.

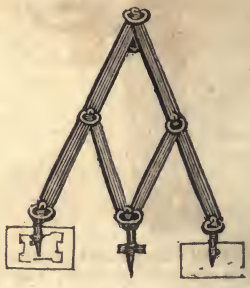
PENSION (in Law.) An annual allowance made to a person without any equivalent in return.

PENSIONER. One who receives a pension; also, one maintained at the charge of a government, or of any company or hospital.

PENSIONERS, GENTLEMEN, or KING'S PENSIONERS. A band of English gentlemen to the number of 40, first set on foot by King Henry VII., whose office it is to guard the king's person in his palace.

PENTAGON. A geometrical figure, having five sides and five angles.

PENTAGRAPH. A copying machine, by which designs may be copied in any proportion by persons who are not skilled in drawing. It consists of four jointed levers, as in the subjoined figure.



PENTAGYNIA (in Botany.) An order of plants in the Linnæan system, comprehending such as have pistils in an hermaphrodite flower.

PENTAMETER. A sort of verse in Latin and Greek, consisting of five feet or metres.

PENTANDRIA (in Botany.) One of the Linnæan classes, comprehending plants which have flowers with five stamens.

PENTATEUCH. The five books of Moses.

PENTHOUSE. A shed hanging forward.

PENUMBRA (in Astronomy.) A partial shade observed between the perfect shadow and the full light in an eclipse.

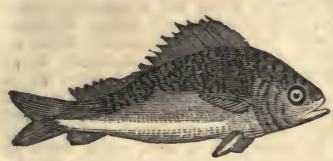
PEPPER. An aromatic fruit or berry brought from India. It is of three kinds, namely, black, white, and long. The black is the fruit of a tree that grows in the Spice Islands.

PER. A Latin preposition, signifying by, used in many phrases, as per force, pr. or per annum, per cent. or per centum, &c.

PERAMBULATOR. An instrument for measuring distances, otherwise called a pedometer, or surveying wheel.

PER CENTUM, or Pr. Cent. Rate of interest, so much for each hundred, as five per cent. that is, five dollars for every hundred dollars.

PERCH. A kind of fish with sharp incurvate teeth, the flesh of which is very delicate. It seldom grows to any great size. The body is deep, the scales rough, the back arched, and the side lines placed near the back. For beauty of colours, the perch vies with the gaudiest of the inhabitants of the ponds, lakes, and rivers.



PERCH (in Commerce.) A measure of five yards and a half, or sixteen feet and a half.

PER CHANCE. Accidentally.

PERCUSSION. The impression a body makes in falling or striking upon another. It is either direct or oblique; direct when the impulse is made in the direction of a line perpendicular at the point of impact, and oblique when it is given in a line oblique to the place of impact, or that does not pass through the common centre of gravity of the two striking bodies.

PEREMPTORY (in Law.) Absolute or determinate, as peremptory writ, &c.

PERENNIAL. A plant, the root of which continues for more than two years.

PERFORATION. Boring or making a hole through.

PER FORCE. Against one's inclination.

PERIANTH. The calyx or cup of a flower when it is contiguous to the flower, in distinction from the calyx or outer covering of the flower.

PERICARDIUM. A double membrane which surrounds the whole compass of the heart.

PERICARP. A viscous bag with seeds, or a vessel producing seeds.

PERICRANIUM. A membrane which encloses the bones of the skull.

PERIGEE (in Ancient Astronomy.) That point in the heaven in which the sun or any planet is least distant from the centre of the earth.

PERIHELION (in Modern Astronomy.) That point of a planet's orbit in which it is nearest to the sun, and which, for the earth, is at this time 9° 30′ 5″ of Cancer, the increase being a degree in 72 years, or 1° 23′ 2″ in a century. The perihelion of all the planets is different: thus, that of Mercury is in 14° of Gemini, of Venus 9° of Leo, Mars in 2° of Pisces, Jupiter in 10° of Sagittarius, &c.; showing that the cause of the variable distances is not in the sun as common to the whole.

PERIMETER. The ambit or extent which bounds a figure or body, whether rectilinear or mixed.

PERIOD (in Astronomy.) The entire revolution of a planet.

PERIOD (in Chronology.) The revolution of a certain number of years, as the Julian period.

PERIOD (in Grammar.) A full stop at the end of any sentence, marked thus (.)

PERIOD (in Arithmetic.) A point or comma after every third place in a series of figures; also, in the extraction of roots to point off the figures into given numbers or parcels.

PERIOD (in Medicine.) The interval between the coming on of fits in intermitting disorders.

PERIOECI (in Geography.) Inhabitants of the earth who live under the same parallel of latitude, but opposite parallels of longitude.

PERIPHERY. The circumference of any circle or curve, &c.

PERIPATETICS. The followers of Aristotle, whose doctrines are distinguished by the name of the Peripatetic Philosophy. He also was called the Peripatetic, because he delivered his lectures walking.

PERIPHRASIS. Circumlocution, or expressing any thing by many words which might be expressed by a few.

PERISCII. Inhabitants of the earth whose shadow goes round them in a day.

PERISTALTIC MOTION. The motion of the intestines, which resembles the motion of a worm.

PERISTYLE. A piazza, as in the middle of the gymnasium at Athens.

PERJURY. Taking a false oath knowingly and wilfully.

PERIWINKLE. A kind of sea snail.

PERMIT (in Law.) A license or warrant for persons to pass with or sell goods.

PERORATION. The epilogue or concluding part of an oration.

PERPENDICULAR (in Geometry.) A

line which, when it falls upon another line, makes the angles on each side equal and right angles.

PERPENDICULAR (in Gunnery.) A small instrument used for the finding the centre line of a piece in the operation of pointing it at any object.

PERRY. A drink made of the juice of pears.

PER SALTEM. A leap from subject to subject.

PER SE. By or in itself; things considered per se, that is, in the abstract, or abstracted from all others.

PERSECUTION. The infliction of pain on another designedly, and with force and violence, in violation of the laws either of God or man, such as the persecutions of the primitive Christian church: the first happened in the reign of Nero, and the last in that of Dioclesian.

PERSEUS (in Heathen Mythology.) A hero, the son of Jupiter and Danae, who procured the Gorgon's head, and released Andromeda.

PERSEUS (in Astronomy.) A constellation in the northern hemisphere.

PERSIAN. A native of Persia. The present empire of Persia was founded on the ruins of the Parthian empire, by Sapor, 220 A. C. Ancient Persia was one of the four great monarchies, founded by Cyrus 556 before Christ, and conquered by Alexander 324 B. C.

PERSIAN LILAC. A handsome shrub, having a broader leaf and a finer flower than the common lilac.

PERSIAN ORDER (in Architecture.) An order wherein the entablature is supported by the figures of men instead of columns. They were intended to represent the Persians taken captive by the Athenians.

PERSON (in Grammar.) A term for nouns and pronouns which express the person of the speaker; also, the inflection of verbs answering to the different persons. There are three persons, namely, the first, or the person speaking; the second, the person spoken to; and the third, the person spoken of.

PERSONAL (in Law.) Belonging to the person and not to the thing, as personal goods, as opposed to real property or estates; personal action, an action against the person.

PERSONAL VERB (in Grammar.) A verb that has inflections or endings to express the persons of the agent.

PERSONATÆ (in Botany.) One of Linnæus' natural orders of plants, which have a labiate corolla or flower with the lips closed, as the aconite, &c.

PERSONATING. Representing any one by a fictitious or assumed character, so as to pass for the person represented.

PERSONS (in Law) Are distinguished into natural persons whom God has formed, and artificial persons, or those formed by society, as corporations or bodies politic.

PERSPECTIVE. A branch of mixed mathematics, which shows how to represent objects on a plane surface, as naturally as they would appear to our sight if seen through that plane, supposing it were as transparent as glass. Perspective is divided into Aerial Perspective, which has principally a reference to the colouring and shading of distant objects; and Lineal Perspective, which relates to the position, form, magnitude, &c. of the several lines or contours of objects, &c. It is, however, an art reduced to mathematical rules. O, P, and O, Q, are on the ground plane. P, Q, is the horizontal plane in which is the eye or point of sight, and in which all objects on the ground plane vanish in distance as at P and Q. The point of sight is where the horizontal line and the perpendicular O N cross.

PERSPECTIVE, History of. Perspective, as a branch of optics, was known and practised at an early period. It was taught by Democritus and Anaxagoras, and treated of by Euclid in his Optics. Alhazen, likewise, in his optical treatise, speaks of this art, and of its importance for the painter; but the first writers who professedly treated on perspective were Bartolomeo Bramantino, in his Regole di Perspectiva, &c. dated 1440, and Pietro del Borgo, who supposed objects to be placed beyond a transparent tablet, and so to trace the images which rays of light emitted from them would make upon it. Albert Durer constructed a machine upon the principles of Borgo, by which he could trace the perspective appear-

ance of objects. Leon Battista Alberti, in his treatise De Pictura, speaks chiefly of perspective; and Balthazar Peruzzi, of Siena, who died in 1506, wrote a system of perspective, which appeared in 1540. He is said to have first recommended points of distance, to which are drawn all lines that make an angle of 45 degrees with the ground line. Guido Ubaldi, in his Perspective, published in 1600, showed that all lines are parallel to one another, if they be inclined to the ground line, and converge to some point in the horizontal line; and that through this point also will pass a line drawn from the eye parallel to them. His work contained the first principles, which afterwards formed the ground work of Dr. Taylor's. He was immediately followed by Giacomo Barozzi, of Vignola, whose two rules of Perspective were published, with a commentary, by Ignatius Dante. Marolois' work was published at the Hague in 1615, and that of Sirigatti, which was an abstract of Vignola's, in 1625. But the most celebrated writer on this subject was Dr. Brooke Taylor, who, in his Linear Perspective, has laid down principles far more general than those of any of his predecessors. He does not confine his rules to the horizontal plane only, but he has made them applicable to every species of lines and planes. Likewise, by his method, which is exceedingly simple, the fewest lines imaginable are required to produce any perspective representation. As a proof of the excellence of his method, it suffices to add, that it has been followed by all who have treated on this subject, and is universally adopted in practice. Mr. Hamilton published his Stereography in 2 vols. folio, after the manner of Dr. Taylor; besides which there are some good treatises on the subject from Ware, Cowley, Ferguson, Emerson, &c.; but Mr. Kirby's system of perspective has been generally esteemed for its practical utility.

PERSPECTIVE. In gardens or at the end of galleries, designed to deceive the eye by representing the continuation of an alley or a building, &c.

PERSPECTIVE-GLASS. The glass or other transparent surface supposed to be placed between the eye and the object, perpendicularly to the horizon.

PERSPIRATION. The evacuation of the juices of the body through the pores of the skin. This is either sensible, which is called sweating; or insensible, which is not perceptible to the senses.

PERUVIAN BARK. A drug, the bark of a tree growing in Peru. Peruvian bark is used as a remedy in intermittent fevers or agues; and by some persons is prescribed in other kinds of fevers, in confluent small-pox, in gangrenous sore throat, and in every species of gangrene. It is given in powder, as an extract, a spirituous tincture and decoction; but the most efficacious form is that of powder.

PESTLE. An instrument for pounding in a mortar.

PETAL. The leaf of the corolla or flower.

PETARD (in Fortification.) A hollow engine shaped like a sugar-loaf, made for breaking open gates, drawbridges, &c.

PETIOLE (in Botany.) The leaf-stalk, or the stem which supports the leaf.

PETITION (in Law.) A supplication in lieu of a writ, which is always made by a subject to a king when the latter is a party in the suit; also, any supplication drawn up in form, and addressed to the president or either of the two houses of congress, in this country.

PETITIO PRINCIPII (among Logicians.) Begging the question, or taking for granted that which is the matter in dispute.

PETREL. A sea-fowl of a black colour, about the size of a swallow, with long slender legs, and web feet. It is sometimes found at a great distance from land, and sailors call them Mother Carey's chickens, and look upon their appearance as the presage of a storm.

PETRIFACTIONS (among Mineralogists.) Stony matters incrusted within the cavities of organized bodies, as the incrustations of limestone or selenite in the form of stalactites or dropstones from the roofs of caverns.

PETRIFACTION. The conversion of wood, bones, or any other substance, into stone; also, that which is turned into stone.

PETROLEUM. Rock oil, a liquid bituminous substance which distils from rocks.

PEWTER. A compound metal, or an alloy of tin with copper, lead, zinc, bismuth, or antimony.

PHALANX. A Macedonian legion, formed into a square compact battalion of pikemen.

PHANTASMAGORIA. An optical exhibition very similar to the magic lantern.

PHARAOH. A name common to several kings of Egypt mentioned in Scripture. The fourth of this name was drowned in the Red Sea.

PHARMACOPŒIA. A book of medicines.

PHARMACY. The art of preparing, compounding, and preserving medicine.

PHAROS. A watch tower among the ancients.

PHASES. The various appearances of the moon at different ages, being first a crescent, then a semicircle, then gibbous, and lastly full, when she returns by the same gradation to the state of a new moon.

PHEASANT. A bird of game, highly esteemed for its flesh. The pheasant of Europe, in shape and plumage, is one of the most elegant of birds. It was originally brought from the banks of the river Phasis, in Asia Minor, whence it derives its name. In shape it resembles our wild pigeon, its tail being eighteen inches in length, and nearly equals the domestic cock in size. It is beautifully marked with various brilliant hues. The cock pheasant is considerably larger, his tail longer, and his plumage more brilliant, than that of the hen pheasant.

PHEON. A kind of missile weapon or dart with a barb, which is sometimes borne in coats of arms.

PHIAL. A little glass bottle, mostly used for medicine.

PHILOLOGY. An assemblage of sciences, consisting of grammar, rhetoric, poetry, antiquities, history, and criticism, called by the French, belles lettres; also, the science of languages.

PHILOSOPHER. One who is versed in or addicts himself to the study of philosophy.

PHILOSOPHER'S STONE. The object of alchymy by a long sought for preparation, by which, as they pretended, the base metals might be converted into gold and silver.

PHILOSOPHY. Properly, the love of wisdom, a term applied either to the study of nature or morality, founded on reason and experience, or the systems which different men have devised of explaining the various phenomena in the natural and moral world, as the Pythagorean philosophy, which taught, among other things, the transmigration of souls; the Aristotelian philosophy, or the doctrines of Aristotle, which are to be found in his works; the Socratic philosophy, which is to be found in the writings of Xenophon and Plato; Epicurean philosophy, a sceptical licentious scheme of morals ascribed to Epicurus; Stoic philosophy, the doctrines of Zeno the stoic, who maintained, among other things, that a man might be happy in the midst of the severest tortures; the Cynic philosophy, the followers of which affected a great contempt of riches and of all sciences except morality; and the Sceptical philosophy, broached by one Pyrrho, who affected to doubt every thing. The Hindoos and Chinese were the earliest philosophers; from them philosophy travelled into Chaldea and Egypt, and from these countries into Greece, where philosophers were much honoured. In Europe, philosophy was revived by Copernicus, Bacon, Galileo, Descartes, Locke, and Newton; and improvements have been continued down to our own time by La Place, Herschel, Priestly, Lavoisier, Phillips, Stuart, Davy, and others. The last system of moral philosophy is by Stuart; of natural philosophy, by Newton; of chemical philosophy, by Davy; and of mathematical philosophy, by La Place.

PHLEBOTOMY. The opening a vein for the purpose of discharging some of the blood.

PHLEGM (in Anatomy.) A thick tenacious matter secreted in the lungs.

PHLEGM (in Chymistry.) A watery distilled liquor, in distinction from a spirituous liquor.

PHŒNIX. The date-palm tree, which is said to rise again from its own ashes.

PHOSPHATES. Salts formed by phosphoric acid, with the alkalies, earths, and metallic oxides.

PHOSPHITES. Salts formed with phosphorus united to the earths, alkalies, and metallic oxides.

PHOSPHORIC ACID. An acid formed by the combination of muriatic acid with oxygen.

PHOSPHOROUS ACID. An acid formed by the combination of phosphorus with oxygen,

It contains less of the latter than phosphoric acid.

PHOSPHORUS. A yellow semitransparent substance, of the consistence of wax, but brittle during the frost. It is a compound of hydrogen with fermenting matters, by which the hydrogen is so gradually excited and evolved, and so masked, as to exhibit a slow combustion on combination with oxygen at the low heat of 44°; but on the excitement being increased to 148°, it rapidly combines with the oxygen of the air, and displays vivid flame. This peculiar combination of hydrogen causes the light of fish, rotten wood, glow-worms, &c.; also "the will-of-the-wisp," and the luminous gas of clouds. The important basis of phosphorus remains undetected.

PHOSPHURET. A substance formed by the union of alkalis, earths, and metallic oxides with phosphorus.

PHRENOLOGY. A newly invented science, which professes to teach, from the conformation of the human skull, the particular characters and propensities of men, presuming that the faculties and operations of the human mind have their particular seat in the brain, and are to be traced by particular external marks.

PHYLACTERY. A charm or amulet among the ancients, which, being worn, was supposed to preserve people from certain evils, diseases, or dangers.

PHYSICS, or NATURAL PHILOSOPHY. The science which explains the doctrine of natural bodies, their phenomena, causes, and effects, with their various affections, motions, and operations.

PHYSIOGNOMY. The study of men's particular characters and ruling passions from the features of the face and the cast of the countenance.

PHYSIOLOGY. The same as Physics; also that branch of medicine which treats of the structure and constitution of the human body, and the functions of the various parts, with regard to the cure of diseases.

PHYTOLOGY. A treatise on the forms, properties, and kinds of plants.

PIA MATER (in Anatomy.) The interior membrane enclosing the brain.

PIANO FORTE. A well known keyed instrument of German invention, which sends forth sounds both piano and forte, that is, soft and strong.

PIAZZA. A spacious place enclosed with columns.

PICÆ. An order of birds in the Linnæan system under the class Aves, comprehending such as have their bill compressed and convex, including the parrot, crow, raven, magpie, cuckoo, jay, bird of paradise, &c.

PICKLE. A brine or liquor usually composed of salt for seasoning meat, and also of spice and vinegar for preserving fruits; also, the fruits preserved in pickle.

PICQUET (in Military Affairs.) A certain number of men, horse or foot, who do duty as an outguard, to prevent surprises.

PIE (in Printing.) The composed matter broken or thrown out of order.

PIER. A mole or rampart raised in a harbour to break the force of the sea.

PIGEON. A domestic bird, of which there are many varieties, as the rock pigeon, the carrier pigeon, the powter, shaker, tumbler, &c.

PIGMENTS. Artificial preparations in imitation of certain colours.

PIG OF LEAD. About two hundred and fifty pounds weight.

PIKE (in Ichthyology.) A fish which abounds in most of the lakes of Europe. It is remarkable for its voracity, and also for its longevity. The engraving represents the American pike.

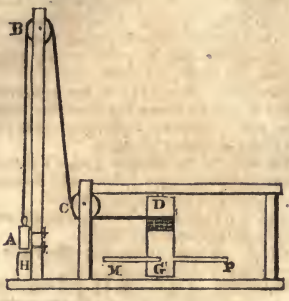
PIKE (in Military Affairs.) A long slender staff with a pike or spike at the end.

PILASTER. A square pillar.

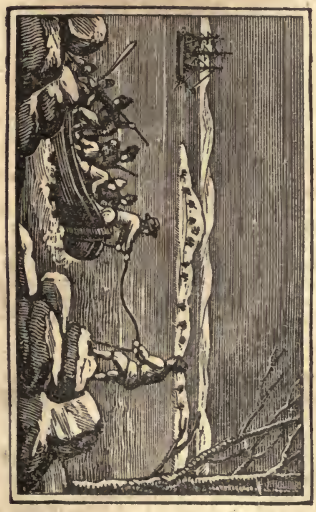
PILE (in Artillery.) A heap of shot or shells piled up into a wedgelike form.

PILE-DRIVER. A machine for driving pointed beams of wood into beds of rivers or soft foundations, on which to raise bridges and buildings. The weight A is raised to B by the rope B C D, coiled round the cylinder D G, by the lever M. P. When A ar-

rives at B, it is detached, and falling on H, drives it down.



PILGRIM. A person who takes a long journey, often with great privations, for devotional purposes. The first English settlement made in New-England was made at Plymouth, Dec. 22, 1620, by 101 Puritans, who fled from England on account of religious persecution. The anniversary of the landing of the Pilgrims is still observed.



PILLAR. An irregular kind of column, raised to support a superstructure.

PILLION. A sort of soft saddle for a female to sit on horseback behind a horseman.

PILLORY (in Law.) A wooden machine in which offenders are exposed to the gaze of the multitude.

PILLOW (among Mariners.) A piece of timber on which the boltsprit rests.

PILOT. One who is employed to conduct ships into roads or harbours, over bars or sands, &c.

PIMENTO. See ALLSPICE.

PIN. A small sharp-pointed piece of wire with a head to it, used by women in fastening their clothes; also, any thing in the shape of a pin which serves to fasten, as the linchpin, which locks the wheel to the axle; also, the screw of a musket barrel, and the like.

PINCERS. A very useful instrument used by carpenters, smiths, and other artisans, being a double lever, the fulcrum of which is in the joint.

PINCHBECK. An alloy, containing three parts of zinc and four of copper.

PINE. A genus of trees, of which the magnificent cedar of Lebanon is one species, remarkable for its size and durability. The wild pine of Norway supplies the deals for buildings, and often grows straight to the height of 80 feet. Its resinous juices resist the frost, and preserve the leaves during winter.

PINEAL GLAND. A small heartlike substance, about the size of a pea, situated at the basis of the brain.

PINE-APPLE. The fruit of an herbaceous tropical plant, which has leaves something similar to those of the aloe. The fruit resembles in shape the cone of the pine-tree, whence it has derived its name. Its botanical name was Ananas, and in the Linnæan system, Brumelia Ananas.

PINION. The joint of a bird's wing remotest from the body.

PINION (with Watchmakers.) The nut or lesser wheel of a watch.

PINION (with Mechanics.) A lesser wheel which plays in the teeth of a larger.

PINK. A small fragrant flower, of divers rich colours.

PINK (among Painters.) A faint red colour.

PINK (among Mariners.) A small vessel with bulging sides.

PINNACE. A small vessel having sails and oars, and carrying three masts; also, one of the boats belonging to a man of war.

PINT. An English beer measure, the half of a quart and eighth of a gallon.

PINXIT, abbreviated PINX. Denotes, when placed at the bottom of a picture with the painter's name, that he painted it.

PIONEERS (in Military Tactics.) Labourers who attend an army in its march, to clear the way by cutting down trees and levelling roads, as also to cast up trenches, make mines, and the like.

PIONY. A garden plant, bearing a large flower resembling a rose in shape.

PIP. A disease in young birds, which consists of a white skin or film under the tongue.

PIPE. A tube made of clay, which is used in smoking.

PIPE (in Building.) A conduit for the conveyance of water and other fluids.

PIPE (in Music.) A musical wind instrument, smaller than a flute. Pan-pipes are a range of short pipes bound together side by side.

PIPE (in Anatomy.) The windpipe.

PIPE (in Commerce.) A measure of wine, containing 126 gallons.

PIPE (among Miners.) The ore which runs endwise in a hole.

PIPE-FISH. A fish so called from the length and slenderness of its body.

PIQUET. A game of cards played by two persons with only thirty-two cards, rejecting all the deuces, threes, fours, fives, and sixes.

PIRATE. A sea robber; one who lives by plunder at sea.

PISCES (in Ichthyology.) The third class into which Linnæus divided the animal kingdom, consisting of five orders, namely, the abdominales, apodes, cartilaginii, jugulares, and thoracici. They breathe air by their gills instead of lungs, the air being extracted by an apparatus. They have the senses of land animals, and can move at the rate of a mile a minute. The multitude of fish far exceeds that of land animals, and their varieties, forms, and habits, seem equally great, though little observed.

PISCES (in Astronomy.) The twelfth and last sign in the zodiac, marked thus (♓.)

PISCES VOLANS. A constellation in the southern hemisphere.

PISTACHIO. A nut of an aromatic smell, growing on a tree in Syria, from which an oil is extracted.

PISTIL, or POINTAL (in Botany.) An organ adhering to the fruit for the reception of the pollen.

PISTOL. A sort of small fire arms, the barrel of which is shorter and thicker than that of a common gun.

PISTOLE. A German coin, in value from 17*s.* to 19*s.* sterling.

PISTON. A sucker, or that part which acts as such in all pumps, &c.

PITCH. A tenacious oily substance, drawn chiefly from pines and firs.

PITCH (in Architecture.) The angle to which a gable end, and consequently a whole building, is set.

PITCH (in Music.) The acuteness or gravity of any particular sound.

PITFALL. A gin or snare to catch beasts.

PITH. The soft spongy substance in the stalk or stem of plants.

PIVOT. The pin on which any thing turns.

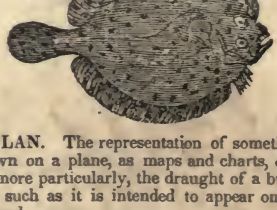
PLACARD. A proclamation in Holland, and in France a table wherein laws and orders were hung up; with us, vulgarly, any bill posted up against a wall or post.

PLAID. A sort of stuff worn by Highlanders.

PLAGIARY. A literary thief, who purloins the works of another, and publishes them in his own name.

PLAGUE. A contagious and malignant distemper.

PLAICE. A sort of flat fish, weighing from 8 to 10 pounds, which has a delicate flesh. This fish is more flat and square than the halibut.



PLAN. The representation of something drawn on a plane, as maps and charts, &c.; or, more particularly, the draught of a building, such as it is intended to appear on the ground.

PLANE (in Geometry.) A plane or level surface, whose parts lie even between its extremities.

PLANE (among Joiners.) An edged tool for paring and shaving wood smooth.

PLANE TABLE. A simple instrument whereby the draught of a field is taken on the spot.

PLANETARIUM, or ORRERY. An astronomical machine, made to represent the motions of the heavens. See ORRERY.

PLANE-TREE. A tall tree resembling a maple, which is a native of America.

PLANETS. Wandering bodies, or such stars as change their position, in distinction from the fixed stars. They are distinguished into primary and secondary. The primary are those which are supposed to revolve round the sun, as Jupiter, Mercury, Venus, &c.; and the secondary are those which revolve round a primary planet, as the Moon, the satellites of Jupiter, Saturn, and Uranus. The original number of planets was six, constituting, as was imagined, the whole planetary system. These were Mercury, Venus, the Earth, Mars, Jupiter, and Saturn, which were distinguished by some mark or attribute of

the deities of those names. Thus, the mark of Mercury, ☿, represents his caduceus; that of Venus, a mirror, ♀, with a handle to it; that of Tellus, the earth, ⊕, to denote its form; that of Mars, the god of war, a spear, ♂; that of Jupiter, the first letter of his Greek name, ♃; and that of Saturn, a scythe, ♄. To the above six planets have been added five others, namely, the Georgium Sidus, or Uranus, ♅, Ceres, Pallas, Juno, and Vesta.

PLANISPHERE. A projection of the sphere, and its various circles on a plane, such as maps, &c.; but more particularly, a projection of the celestial sphere upon a plane, representing the stars, constellations, &c.

PLANK. A piece of timber sawed for carpenter's work.

PLANTAIN. A tree in the West Indies, which has a beautiful foliage, and bears an esculent fruit.

PLANTATION. A cultivated estate; a farm.

PLANTER. A proprietor of grounds in the West Indies and southern section of the United States.

PLASHING HEDGES. Bending the boughs and interweaving them, so as to thicken the hedge.

PLASTER (in Medicine.) An external application, of a harder consistence than ointment.

PLASTER (in Masonry.) Mortar for laying on walls, &c.

PLASTERER. One who plasters walls.

PLATE. A broad, flat utensil, as a plate for eating on, and a copper-plate for printing on; any flat piece of metal.

PLATE (in Commerce.) Vessels or utensils made of gold or silver.

PLATFORM (in Architecture.) A row of beams which support the timber work of a roof; also, any erection consisting of boards raised above the ground for an exhibition or any other temporary purpose.

PLATFORM (in Fortification.) An elevation of earth on which cannon is placed.

PLATFORM (in a Ship of War.) A place on the lower deck; the mainmast.

PLATING. Covering baser metals with a thin plate of silver or gold.

PLATINUM. A metal discovered in the mines of Choco, in Peru, nearly of the colour of silver, but less bright. It is reckoned by some to be the heaviest of all metals. It is malleable and ductile like gold.

PLATOON. A small square body of forty or fifty musqueteers, drawn out of a battalion of foot, and placed between the squadrons of horse to sustain them; also, in ambuscades and narrow defiles, where there is not room for the whole battalion.

PLATYPUS. A newly discovered animal, the mouth of which is shaped like the bill of a duck, and the feet are webbed.

PLEA (in Law.) That which either party alleges in support of his own cause.

PLEADER. A counsellor, or one who argues in a court of justice.

PLEADING. Putting in a plea in law; also, the form of the pleading.

PLEBEIAN. One of the plebs or common people among the Romans.

PLEIADES. A cluster or assemblage of stars in the constellation Taurus, commonly called the seven stars.

PLENIPOTENTIARY. A commissioner or ambassador from a government, invested with full power to transact any business with a foreign court.

PLENUM (in Physics.) A term denoting that every part of space or extension is full of matter, as is maintained by the visionary Cartesians.

PLEONASM. A form of expression in which more words are used than are necessary.

PLETHORA. A preternatural fulness of blood.

PLEURA. A membrane covering the inside of the chest.

PLEURISY. An inflammation of the pleura.

PLEXIS. A net-work of nerves.

PLIERS. An instrument, or double lever, the fulcrum of which is at the centre, and it

enables watchmakers and other artisans to take firm hold of any small object.

PLOT (in Dramatic Poetry.) The fable of a tragedy, comedy, or any fictitious narrative.

PLOT (in Surveying.) The plan or draught of a field or any piece of ground surveyed with an instrument, and laid down in the proper figure and dimensions.

PLOTTING. The describing or laying down on paper the several lines, angles, &c. of a piece of land.

PLOVER. A bird which frequents the banks of rivers, and the sea-shore, of which there are several species.

PLOUGH (in Agriculture.) A machine for turning up the soil in preparation for receiving the seed. It consists of a wooden frame, with a handle; a share, or sharpened piece of iron, fixed on the bottom of the plough; and a coulter, another cutting iron, that stands upright in the plough.

PLOUGH (among Bookbinders.) A machine for cutting the edges of books.

PLOUGHSHARE. The pointed plate of iron which is drawn through the soil, a ridge of which it turns over by the rounded shape of the hinder parts.

PLUM. A fruit of which there are many different kinds.

PLUMBAGO, or Black Lead. An ore of a shining black colour.

PLUMBER. A maker of leaden vessels, or worker in lead.

PLUMB-LINE (among Artificers.) A perpendicular to the horizon, formed by means of the plummet.

PLUME. A set of feathers for ornament, particularly ostrich feathers.

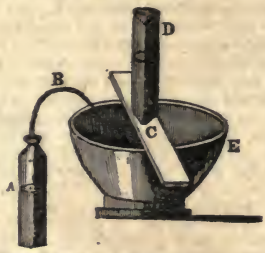
PLUMMET. A leaden weight attached to a string, by which depths are sounded perpendicularly, and perpendiculars are taken by carpenters, masons, &c.

PLUS, i. e. More. A term in algebra to denote addition, marked by the sign (+), as, $4+6=10$, that is, 4 plus 6 equal to 10.

PLUSH. Cloth made either of silk, as velvet, or of hair, as shag.

PNEUMATICS. The science which treats of the mechanical properties of air and other compressible fluids. The principal mechanical properties of air which are treated of under this science, are its fluidity, weight, and elasticity.

PNEUMATIC APPARATUS. An apparatus for generating, collecting, and exhibiting gases. A, is a vessel containing some ingredients for generating gas; B, a pipe to convey it to E, the glass vessel; D, filled with water, which is driven out as the gas enters; C is a resting bar, and a vessel of water to let in D when full of gas for use.



PNEUMATICS, History of. Although the ancients did not investigate the properties of air with the same minuteness as the moderns have done, yet the subject evidently engaged the attention of Aristotle and other Grecian philosophers. Aristotle was aware of the gravity of the air, and observed that a bladder filled with air would weigh more than the same bladder when empty; and Empedocles ascribed the cause of respiration to the weight of the air, which, by its pressure, insinuates itself into the lungs. Its elasticity also, as well as its gravity, must have been known and made the subject of experiments, if it be true, as is related by historians, that Hero of Alexandria, and Ctesibius, his contemporary, invented air-guns. The subject was, however, for a long time neglected, or treated superficially; for the effects which are now known to arise from the gravity and elasticity of the air were for a long time attributed to the imaginary principle of a Fuga Vacui, or Nature's abhorrence of a vacuum, a principle which Galileo did not altogether discard, although he was fully aware of the gravity of the air, and pointed out two methods of demonstrating it by weighing the air in bottles; but the pressure of the atmosphere was first discovered by Torricelli, and clearly demonstrated by an experiment, which terminated in the invention of the barometer in 1643. It occurred to him, on observing that a column of water 34 feet high is sustained above its level in the tube of a common pump, that the same force, what-

ever that was, would sustain a column of any other fluid which weighed as much as that column of water on the same base; and hence he concluded that quicksilver, being about 14 times as heavy as water, would not be sustained at a greater height than 29 or 30 inches. Accordingly he took a glass tube of several feet in length, and having sealed it hermetically at one end, he filled it with quicksilver; then inverting it, he held it upright, and keeping his finger against the open or lower orifice, he immersed that end in a vessel of quicksilver, and on withdrawing his finger, he found that the quicksilver, according to his expectation, descended till the column of it was about 30 inches above that in the open vessel; whence he was led to infer that it could be no other than the weight of the atmosphere incumbent on the external surface of the quicksilver, which counterbalanced the fluid in the tube, and thus introduced the principle, that the air had not only weight, but that its weight was the cause of the suspension of water in pumps, and of the quicksilver in the tube. This principle, after repeated experiments from the philosophers in France, England, and Germany, became established, and that of the vacuum was finally exploded.

From this time they proceeded to be more minute in their investigations, and Father Mersenne, who was the first philosopher in France that was apprized of Torricelli's experiment, set about determining the specific gravity of air, which he made to be as 1 to 400; but Mr. Boyle, by a more accurate experiment, came to a nearer result, and made it to be to that of water in the proportion of 1 to 938; and Mr. Hawksbee succeeded, after repeated experiments, in obtaining the proportion of 1 to 885. Experiments were made by others in the winter as well as the summer, and the medium of all is about 1 to 832.

As to the elasticity of air, which also became the subject of experiment, it was shown that, with moderate pressure, it is always proportional to the density, and that the density is always as the compressing force; whence also the elasticity of air is as the force by which it is compressed.

In consequence of these investigations into the mechanical properties of the air, not only was the barometer invented, and the air-gun revived, but other pneumatic machines were contrived, as the air-pump, air-balloon, thermometer, &c.; of which a more particular account will be found under their respective heads.

POACHING (in Law.) Taking game by unlawful means, privately and without authority.

POETRY. The art of expressing sentiments in measured syllables, according to certain rules, harmony, and taste: identified with the human mind, because practised by all semi-barbarous people, and with improved success, as they advance in civilization. As respects the subject, it is divided into pastorals, satires, elegies, epigrams, &c.; as respects the manner or form of representation, into epic, lyric, and dramatic poetry, &c.; as respects the verse, into blank verse and rhyme.

POINT (in Geometry.) That which has neither length, breadth, nor thickness.

POINT (in Astronomy.) The name for certain parts in the heavens, as the cardinal points, the solstitial points, &c.

POINT (among Artists.) An iron or steel instrument used for tracing designs on copper, wood, stone, &c.; in Commerce, lace wrought with the needle.

POINT-BLANK. The shot of a gun levelled horizontally.

POINTER. A species of dog, that points out the game, when hunting.

POINTERS (in Astronomy.) Two stars in Ursa Major, the hindermost of the wain, so called because they always point nearly in a direction towards the North Pole star.

POINTING (in Gunnery.) The levelling a gun towards an object.

POINTING (in Grammar.) Dividing a discourse by means of points.

POINT OF SIGHT (in Perspective.) A point on a plane marked out by a right line drawn from the perpendicular to the plane.

POINTS (in Grammar.) Hebrew characters, to express vowel sounds; also, characters for separating words and sentences from each other, as the comma (,) the semicolon (;) the colon (:) period or full stop (.) note of admiration (!) note of interrogation (?).

POINTS OF THE COMPASS. Thirty-two divisions in the mariner's compass, each of which is 11 degrees and 15 minutes distant from each other.

POISON. Any substance which in a particular manner deranges the vital functions, and terminates mortally if not counteracted.

POLA, Amphitheatre at. A splendid

specimen of one of those ancient Roman theatres, in the centre of which gladiators and wild beasts used to be exhibited to thousands of spectators. Those at Pola, Verona, and the Coliseum at Rome, are the largest now remaining.

POLANDER. A native of Poland, a country which was formerly an independent kingdom, but now apportioned between Russia, Austria, and Prussia. It is a level country, abounding in marshes; the soil is productive, although the climate is cold. It is celebrated for the salt mines of Cracow, which contain whole villages of miners, many of whom are born in the mines, and for years know not what it is to see the light of day.

POLARITY. The property of pointing to the poles, which is the characteristic of the magnet.

POLE (in Surveying.) A measure containing 16½ feet.

POLE (in Mathematics.) A point ninety degrees distant from the plane of any circle.

POLE (in Astronomy.) The extremity of the axis of the earth, an imaginary point on the earth's surface, of which there are two, namely, the Arctic or North Pole, and the Antarctic or South Pole. These are so encompassed with ice, that every attempt to approach them within a considerable distance has hitherto proved ineffectual.

POLECAT. An animal of the weasel tribe, which emits a most fetid vapour when

pursued. It inhabits Europe and Asiatic Russia. It is a different animal from the America skunk or polecat.

POLEMICS. Treatises concerning disputed points in theology.

POLES. A figurative expression to designate the two fixed points on the earth's surface, or ends of the axis, round which all the rest turn; but their site being surrounded by ice, they have never been approached within 500 miles.

POLES (in Magnetism.) The two points of a magnet, corresponding to the poles of the world, the one pointing to the north and the other to the south.

POLE STAR, or POLAR STAR. A star of the second magnitude, the last in the tail of Ursa Minor, which, owing to its proximity never sets, and is therefore of great use to navigators in determining the latitude, &c.

POLICE. The internal government of any town or country, as far as regards the preservation of peace.

POLICY. The art of government, principally as regards foreign affairs.

POLICY OF INSURANCE. An instrument or deed by which a contract of insurance is effected.

POLITICAL ARITHMETIC. The application of arithmetical calculations to political uses, as in estimating the revenues, resources, and population of a country. The works of Doctor Seybert, in America, and Mr. Marshall, in England, are by many considered proud exemplifications of this science, and deserving the attention of all legislators and men of business.

POLITICAL ECONOMY. The art or science which treats of the wealth of nations. Its object is to ascertain, in the first place, wherein wealth consists, and then to explain the causes of its production and the principles on which it is distributed through the different orders of society. It likewise endeavours to point out the tendency which any political regulations may have to favour or to injure the productions, or most advantageous distribution of wealth. Such is its peculiar object; and, consequently, though writers on political economy may frequently treat on the more important topics of national security, freedom, and happiness, they are then passing the strict limits of their science.

POLL (in Elections.) The register of those who give their vote, containing their name, place of residence, &c.

POLLEN. A prolific powder contained in the anther of flowers.

POLLUX. A star of the second magnitude in the constellation Gemini.

POLY. A prefix in many words, denoting a multitude or indefinite number, as polysyllable, a word of many syllables; polygon, a figure of many angles; polyadelphia, polyandria, &c.

POLYADELPHIA (in Botany.) One of the Linnæan classes, including plants that have many stamens to each flower united by their filaments into three or more distinct bundles.

POLYANDRIA (in Botany.) One of the Linnæan classes, including plants the flowers of which have many stamens.

POLYANTHUS. A plant with a perennial root, that yields many flowers. It is much cultivated in gardens, and greatly esteemed for the richness and diversity of its colours.

POLYGAMIA (in Botany.) One of the Linnæan classes, including plants that have both male and female flowers, as the fig tree, date tree, plantain tree, &c.

POLYGAMY. The having more than one husband or one wife, either at the same time or in succession.

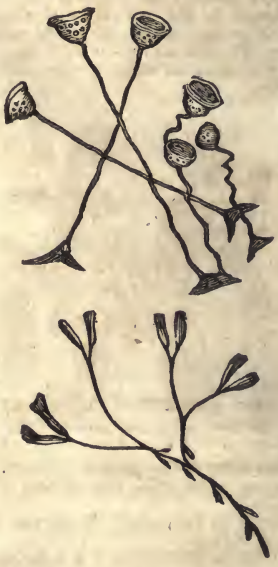
POLYGAMY (in Law.) The having more than one husband or wife at the same time, which is felony.

POLYGLOTT, i. e. Many languages; as, the Polyglott Bible, a Bible printed in many languages.

POLYGON. A figure of many sides and many angles.

POLYGYNIA (in Botany.) One of the Linnæan orders, containing plants, the flowers of which have many pistils.

POLYPE. A species of zoophytes, whose chief animal property consists of having a stomach which is so constituted that it acts equally well if the animal is turned inside out. They propagate by stems or buds, and when cut into parts, each part becomes a perfect animal, living in water, fixed at one end; but myriads of them reside in small cells of corals, madrepores, &c. in forms like plants, and their multiplication and industry create rocks and whole islands in many seas.



POLYPUS. A sea-fish, resembling the cuttle-fish, so called because it has numerous feet.

POLYPUS (in Surgery.) A fleshy tumour, commonly met with in the nose, that abounds in ramifications, from which it has its name.

POLYSYLLABLE. A word of many syllables.

POLYTHEISM. The doctrine that there are more gods than one.

POMACEÆ (in Botany.) One of Linnæus' natural orders, containing plants that have a pulpy fruit, as the apple, pear, &c.

POMATUM. A sweet-scented ointment, originally made of the juice of the apple, called pomewater, but now of hog's lard, rosewater, &c.

POMEGRANATE. A round fruit, of the pomegranate tree, full of kernels.

POMONA. A goddess among the Ro-

mans, worshipped as the patroness of fruits and flowers.

POMPEII. A town of Campania, at the foot of Mount Vesuvius, which was buried in an eruption that happened A. D. 79. The ruins were discovered in the middle of the eighteenth century.

PONTIFEX. The high priest among the Romans.

PONTIFF. The high or chief priest in the Romish and Greek churches, as the pope or patriarch.

PONTIFICALLA. The robes in which a bishop performs divine service.

PONTONS. A bridge made of pontoons, or boats fitted for the purpose of conveying soldiers.

POOP. The uppermost part of a ship's hull.

POPE, or PAPA, (Father.) The head of the Roman Catholic church, and in certain provinces, near Rome, a temporal sovereign. The bishops of Rome affect to owe their origin to the appointment of Peter, the apostle, who, having the keys of heaven given to him, was considered as transferring them to these bishops as his successors: hence they assumed a supremacy which was admitted by all the Western Christians, but resisted by the Eastern ones, who, in Greece, Turkey, and Russia, have a separate Greek church. The vices of the clergy led, however, in the fourteenth and fifteenth centuries, to schisms; and a personal quarrel between the Pope and Henry VIII. led the latter to assume the title of the Head of the Anglican church, and recognise the principles of the reformers, which were adopted by many German princes, and the northern sovereigns. Hence the European Christians are now divided into the Roman and Eastern churches, and the Reformers, who again have split into numerous sects, chiefly in England and Holland. The Pope retains his spiritual ascendancy throughout Italy, France, Austria, Spain, and Portugal, and four fifths of the Irish are Catholics.

POPLAR. A tall, slender tree, of quick growth. The wood is soft, white, and stringy.

POPULATION. The aggregate number of people in any country, which, owing to the increase of births above that of the deaths, is continually increasing in most parts of the habitable world. Asia, which has always been considered as the quarter first occupied by the human race, is supposed to contain above 500,000,000 inhabitants, Africa 60,000,000, America 30,000,000, and 150,000,000 are assigned to Europe; England and Wales 12 millions, Scotland 2, and Ireland 7. The United States, 13 millions.

PORCELAIN. A sort of earth or clay, the finest kind of which is found in China: also, the ware made of porcelain or any fine earths. In China, this earth, being beaten, and steeped in water, affords a cream at the top, and a grosser substance at the bottom, the former of which is used for the finest kind of ware, or china; and the latter, for the coarser sort.

PORCUPINE. An animal, native of Africa and warm climates, resembling a hedgehog, but considerably larger. Its body is covered with long bony spines, which it is capable of erecting in its defence, if attacked or in danger; but not of projecting, as has been alleged.

PORES. Cavities in the skin, which serve as passages for the perspiration; also, small interstices between the particles of matter which compose bodies.

PORPHYRY. A compound rock, consisting most commonly of felspar and quartz.

PORPOISE. A sort of dolphin, having a broad back and a bluntish snout. It is chiefly remarkable for its rolling action in the water.

PORT. A harbour or place of shelter, where ships arrive with their freights, and customs from goods are taken; also, the wine that comes from Oporto.

PORTCULLIS (in Fortification.) A machine like a harrow, hung over the gates of a city, to be let down to keep out the enemy.

PORTER. One who carries goods for hire, and also one who attends at a gate.

PORTER. A kind of malt liquor made of high-dried malt.

PORTHOLES. Holes in the sides of the vessels, through which guns are put.

PORTMANTEAU. A cloak-bag, to carry the necessary clothing on a journey.

PORTUGUESE. Natives of Portugal, a small but fertile kingdom of Europe, having a mild, pleasant, and healthy climate. The Portuguese are friendly and hospitable, but indolent, haughty, ignorant, superstitious, and revengeful. Lisbon is the capital, and contains about 240,000 souls.

POSITION (in Arithmetic.) A rule in which any supposed number is taken at pleasure, to work the question by.

POSITIVE DEGREE. The first degree of any quality expressed by the word itself.

POSITIVE ELECTRICITY. A term applied to bodies supposed to contain more than their natural quantity of electricity.

POSSE COMITATUS (in Law.) The armed power of the county, or the attendance of all persons charged by the sheriff to assist him in the suppression of riots, &c.

POSSESSIVE CASE (in Grammar.) Any ending of nouns which denotes possession.

POST (in Military Affairs.) Any spot of ground that is marked out to be occupied by soldiers.

POST (in Commerce.) A conveyance for letters and despatches.

POST (in Grammar.) A prefix to many words, implying after, as postdiluvian, after the deluge.

POSTHUMOUS CHILD (in Law.) One born after his father's death.

POSTMAN. One who delivers the letters from the post-office to the persons to whom they are addressed.

POSTMASTER. He who has the charge of the letters received in and delivered from the post-office.

POSTMASTER GENERAL. He who presides over the whole business of the post-office department.

POST OBIT. After death.

POST-OFFICE. The office where the business of receiving and forwarding letters is conducted. The transmission of letters by this mode of conveyance was first introduced in 1635, and is now universal. Letters were first conveyed by coaches in 1785. In no country is the post-office establishment conducted on a more extensive scale than in the United States.

POSTSCRIPT. What is added in a letter after it has been signed by the writer.

POSTULATE. Any fundamental principle in a science that is taken for granted.

POTASH. An impure fixed alkaline salt, procured by burning vegetables. It is a brittle, corrosive substance, of a whitish colour and acrid taste.

POTASSIUM. A metallic substance, procured by passing a galvanic charge through vegetable alkali.

POTATO. An edible root, a native of America.

POTSTONE. A mineral of a greenish-gray colour, found abundantly near the lake Como in Lombardy.

POTTER. An artisan who prepares plastic materials, shapes, dries, and ornaments them for use. Certain earths are rendered plastic by being worked with water; forms are given to the plastic material by means of moulds, wheels, and the hands of the workman. The fluid is then evaporated, and the earth is reproduced in its desired form. The glazing, colouring, and ornamenting, involve much science and ingenuity.

POTTERY. The manufacture of earthen pots, or earthenware in general, but particularly of the coarser sorts.

POUNCE. The powder of gum sandarach sifted very fine.

POUND. A weight containing 12 ounces Troy, and 16 avoirdupois weight.

POUND (in Law.) Any enclosed place for the keeping of beasts in, particularly such as have strayed or trespassed.

POUNDER. The name of a great gun, from the weight of the ball it carries, as a six, twelve, and twenty-four pounder, &c.

POWDER. Any dry substance composed of minute particles, as gun-powder, hair-powder, &c.

POWDER-CHESTS. Triangular chests on board a vessel for holding the gun-powder, &c.

POWDER, FULMINATING. When three parts of nitre, two parts of potash, and one of sulphur, are previously dried, and mixed together to trituration, they form a compound known by the name of fulminating powder. A few grains of this mixture exposed to heat in an iron ladle, first melt, and when completely fused, there will be a violent explosion.

This combustion and explosion are owing to the instantaneous evolution of elastic fluids. The potash unites with the sulphur and forms a sulphuret, which with the assistance of the nitre is converted into sulphuretted hydrogen.

POWDER-HORN. A horn in which gunpowder is kept.

POWDER-MILL. A mill in which gunpowder is made.

POWER (in Mechanics.) Any force which, applied to a machine, sets it in motion. There are six simple machines, which are particularly denominated the six mechanical powers, namely, the lever, the balance, the screw, the wheel and axle, the wedge, and the pulley.

POWER (in Arithmetic.) The produce of any quantity multiplied by itself any number of times, as the square, cube, biquadrate, &c.

POWER-LOOM. A loom worked by steam or water.

POWER OF ATTORNEY (in Law.) An instrument or deed whereby a person is empowered to act for another.

POWER OF A GLASS (in Optics.) The distance between the convexity and the focus.

POWTER. A sort of pigeon, which swells up its neck when it is displeased.

PRACTICE (in Arithmetic.) An easy and expeditious method of resolving questions in the Rule of Three, as applied to the daily business of a tradesman.

PRACTICE (in Law.) Any fraudulent, underhand mode of proceeding.

PRACTICE OF THE COURTS (in Law.) The form and manner of conducting and carrying on suits at law or in equity.

PRÆMUNIRE. See PREMUNIRE.

PRÆTOR. A chief magistrate among the Romans, instituted for the administration of justice in the absence of the consuls.

PRAWN. A small sea-fish of the crab kind, larger than a shrimp.

PRAYER. A religious exercise, commanded by God, and producing resignation and hope in the pious, thereby correcting bad passions, and producing mental tranquillity.

PREAMBLE (in Law.) The introductory matter to a statute, which contains the reasons for making such an enactment.

PREBENDARY. A clergyman who has a prebend to officiate in a cathedral.

PRECARIOUS (in Law.) An epithet for what is granted to one upon entreaty, to use so long as the party thinks fit.

PRECEDENCE (in Heraldry.) The right of taking place before another, which is determined by authority, and followed exactly on all public occasions of processions and the like.

PRECEDENT (in Law.) An original writing or deed to draw others by.

PRECEPT (in Law.) A command in writing, sent out by a magistrate for the bringing a person or a record before him.

PRECESSION OF THE EQUINOXES. A slow motion of the equinoctial points, by which they change their place, going from east to west or backward, in antecedentia, as it is called, that is, contrary to the order of the signs.

PRECIPITATE (in Chymistry.) Any substance in a solution which separates and falls to the bottom, particularly a corrosive medicine made by precipitating mercury.

PRECIPITATION. The falling or causing to descend the particles of any metallic or mineral body, which are kept in the menstruum that dissolved it by putting in some alkali, &c.

PREDICATE (in Logic.) That which is predicated, that is, affirmed or denied of a thing, as 'snow is white, ink is not white;' whiteness is here predicated of the snow and the ink.

PREFECT. A chief magistrate among the Romans, who governed a city or province in the absence of the king, consuls, or emperor.

PRELATE. An epithet applied to a dignified clergyman, as a bishop and archbishop.

PREMISES (in Logic.) The two first propositions of a syllogism, which are previously supposed to be proved.

PREMISES (in Law.) Things spoken of or rehearsed before, as lands, tenements, &c. before mentioned in a lease.

PREMIUM. The sum of money given for the insuring of houses, goods, ships, &c.

PREMUNIRE (in English Law.) A writ originally directed against those offences which affected the king or his government, which were committed under the sanction of the pope. It was afterwards extended to all such offences, from whatever cause they were committed; also, the offence itself, which subjected the offender to be put out of the king's protection.

PRESBYTERIANS. A sect of professing Christians who maintain the validity of ordination and government by presbyters.

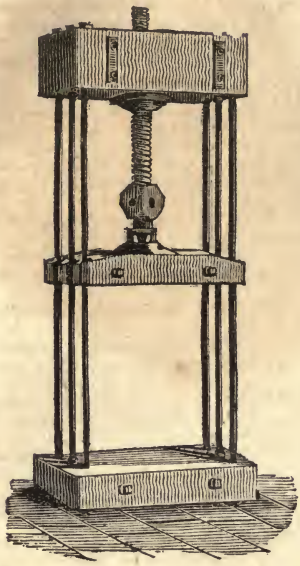
PRESCRIPTION (in Medicine.) That which is prescribed by a physician to be taken by the patient.

PRESCRIPTION (in Law.) A right and title to a thing grounded upon a continued possession of it beyond the memory of man.

PRESENTMENT (in Law.) A declaration or report made by jurors or others of any offence to be inquired of by the court to which it is presented.

PRESS. An instrument formed by the mechanical power of the inclined plane, in the form of a screw, sometimes made of wood, and sometimes of metal, by means of which manufactured goods are finished and packed, and printed paper pressed before it is bound into books. The engraving represents Robert Hoe & Co's patent press, with side rods and screw of iron, the head, platin, and foot, of mahogany, secured from splitting by two rods

of iron, with screws on one end, passing through them.



PRESS. The printing machine, and also printing itself, as the liberty of the press, that is, the liberty of printing whatever one pleases, without any restriction from the government.

PRESS or PRESSGANG. A detachment of seamen headed by an officer empowered to impress men in the naval service in England.

PRESUMPTIVE EVIDENCE (in Law.) That which amounts almost to full proof.

PRESUMPTIVE HEIR. One who, if the ancestor should die immediately, would under present circumstances be his heir, as distinguished from the heir apparent.

PREVENTIVE SERVICE. A term for a body of men employed on the English coast, to keep watch and prevent smuggling.

PRIMA FACIE. On the first view of any question.

PRIMARY PLANETS. Those which revolve round the sun as a centre, as Mercury, Venus, the Earth, Mars, Jupiter, Saturn, and Herschel.

PRIMATE. The first or chief archbishop.

PRIMATE (in Zoology.) The first order in the Linnæan class of mammalia, including man, the ape, baboon, monkey, &c.

PRIME FIGURE. That which cannot be divided by any figure but itself.

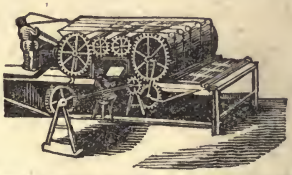
PRIMITIVE (in Grammar.) The root or original word in a language, from which others are derived.

PRINCE'S METAL. A mixture of copper and zinc.

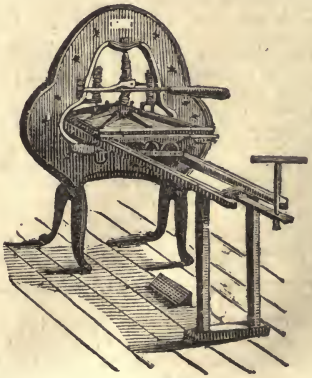
PRINT. The impression taken from a copper-plate.

PRINTING. The art of taking impressions from characters or figures, moveable or immoveable, on paper, linen, silk, &c. Printing is of four kinds, namely, one for books, from moveable letters composed and set in a form, and another for books, from solid pages; a third for pictures, from copper-plates; a fourth for printing calicoes, linens, &c. from blocks, on which are represented different figures. The first of these is printing, properly so called; the second is stereotype printing; the third, rolling-press printing, or copper-plate printing; and the fourth, calico-printing. Printing was first introduced in the fifteenth century at Mentz and Haerlem, when, instead of the present moveable types or letters, blocks of wood were carved, and the impressions were taken only on one side.

PRINTING-PRESS. The principal machine employed in the art of printing, by which impressions are taken from the type after it has been composed, and put into the form of a sheet. The first engraving repre-



sents a machine for printing worked by steam, which will print from 1200 to 1500 impressions per hour; the second is a press made of iron, which is worked by a man and a boy,



who can print from 250 to 300 impressions per hour. These presses are manufactured by Robert Hoe & Co. of New-York; and the latter, or hand press, is highly approved of, and in very general use throughout the United States.

PRISM (in Geometry.) An oblong solid contained under more than four planes, whose bases are equal, parallel, and alike situated.

PRISM (in Dioptrics.) A solid glass in the form of a prism, much used in experiments on the nature of light and colours.

PRIVATEERS. Vessels fitted out by private persons, with the license of the government, for the purpose of making prizes of the enemy's ships or goods.

PRIVET. A shrub much used for hedges.

PRIVY (in Law.) One who is partaker of or has an interest in any action, as privies in blood, that is, heirs to the ancestor; privies in representation, as executors or administrators to the deceased.

PRIVY COUNCIL. The principal council of a monarchical government.

PRIVY SEAL. The king's seal, which is first set to such grants as pass the Great Seal of the English government.

PRIZE (in Naval Affairs.) A vessel taken from the enemy.

PROBATE (in Law.) The right or jurisdiction of proving wills.

PROBATION. The trial of a clergyman's qualifications as a minister of the gospel, preparatory to his settlement.

PROBE. A surgeon's instrument, for searching the depth, &c. of a wound.

PROBLEM (in Geometry.) A proposition in which something is proposed to be done.

PRO BONO PUBLICO. For the public good.

PROBOSCIS. An elephant's trunk.

PROCEEDS. What proceeds or arises from any mercantile transaction, as the net proceeds of a sale.

PROCTOR. An advocate in the civil law.

PRODUCE. What any country yields from labour and national growth, which may serve either for the use of the inhabitants, or be exported to foreign countries. The crops of grain, &c. are the produce of the fields.

PRODUCING (in Geometry.) The continuing a line.

PRODUCT. The number or quantity produced by multiplying two or more numbers together, as $5 \times 4 = 20$, the product required.

PRODUCTION. A work either of nature or art, as the productions of the field, or the productions of the press.

PROFESSOR. A lecturer or reader on any art or science; one who publicly teaches any art.

PROFILE (in Architecture.) The draught of a building, fortifications, &c.

PROFILE (in Sculpture and Painting.) A head or portrait when represented sidewise, or in a side view.

PROFIT. What is gained by any mercantile transaction.

PROFIT AND LOSS (in Commerce.) The profit or loss arising from goods bought and sold; the former of which, in bookkeeping, is placed on the creditor's side, the latter on the debtor's side.

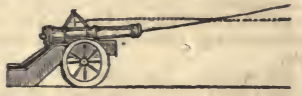
PRO FORMA. By way of form.

PROGRAMMA. A bill or advertisement containing the notice of any exhibition or ceremony.

PROGRESSION (in Arithmetic and Geometry.) A series of quantities, keeping a certain ratio among themselves; when they decrease or increase with equal differences, it is called arithmetical progression, as 1, 3, 5, 7, 9; when they increase by a common multiplier, or decrease by a common divisor, it is called geometrical progression, as 1, 2, 4, 8, 16; which increase by the common multiplier, 2.

PROHIBITED GOODS (in Law.) Such as are forbidden to be carried out of or brought into any country.

PROJECTILES. Bodies which are thrown forward with any violent force, as a stone cast from a sling, or a bullet shot from a gun. The curve line represents the path of a projectile or ball shot from the cannon.



PROJECTION. The representation of an object on the perspective plane.

PROJECTION (in Architecture.) The out-jutting or prominency of columns, &c. beyond the naked of the wall.

PROLEGOMENA. An introduction or preliminary discourse.

PROMISSORY NOTE. A note of hand, promising the payment of a certain sum at a certain time.

PROMONTORY. Any high ground running out into the sea, the end of which is called a cape.

PROMPTER. One who aids the memory of another.

PRONOUN (in Grammar.) A word standing in the place of a noun, and marking the different persons. They are personal when they simply denote the person, as 'I, thou, he,' &c.; possessive, when they also denote possession, as 'my, thine, his,' &c.; relative, when they express a relation to something going before, as 'which, what;' interrogative, when they serve to ask a question; demonstrative, when they point out things precisely, as 'this, that;' indefinite, when they point out things indefinitely, as 'any, some.'

PROOF (in Printing.) An impression from a copper-plate, to show the state of the engraving.

PROOF SHEET. The sheet of a book on which the errors to be corrected are marked.

PROOF SPIRITS. Spirits which, on proof or trial, are found to be of a certain strength.

PROPER NAME. The name of a particular person or thing.

PROPERTY (in Law.) The exclusive right of possessing, enjoying, and disposing of any thing.

PROPORTION. The equality or similitude of ratios; thus, the four numbers, 4, 8, 15, 30, are proportionals, or in proportion, because the ratio of 4 to 8 is equal or similar to that of 15 to 30, it being in both cases as 1 to 2. Between proportion and ratio there is this difference, that the proportion consists always of four terms, and the ratio only of two.

PROPOSITION (in Mathematics.) A thing proposed to be demonstrated or proved.

PROPOSITION (in Logic.) Any sentence or speech which affirms or denies any thing. It consists of the subject, or that of which any affirmation or denial is made; the predicate, or that which is affirmed or denied of the subject; and the copula, which unites the two.

PROROGATION. A lengthening or prolongation of time. Applied generally to legislative bodies.

PROSECUTION (in Law.) The commencing a suit against any one in a court of law.

PROSODY. That branch of grammar which teaches the pronunciation of words according to a certain rule or measure.

PRO TEMPORE. For the time being.

PROTEST (in Law.) The declaration of any member of a legislative body stating his dissent from the vote of the house, and his reasons for such dissent, which he has a right of entering on the journals of the house; also, a declaration against the proceedings of a court.

PROTEST (in Commerce.) The act of the master on his arrival with his ship from parts beyond the seas, to save him and his owners harmless and indemnified from damage sustained during a storm; also, the declaration made by the holder of a bill of exchange that the same is dishonoured.

PROTESTANT. The name first given, in 1529, to the followers of Luther, who protested at the diet of Spires against a decree of Charles V.; a name since given to all members of the reformed churches.

PROTEUS. A sea deity of antiquity, who was said to assume various shapes.

PROTHONOTARY. A register or clerk of a court.

PROTOCOL. The first draught of a deed, contract, or instrument.

PROTOMARTYR. The first martyr or witness that suffered death in testimony of the truth; a title given to Saint Stephen.

PROTOTYPE. The first pattern or model of a thing; the original of a copy.

PROTRACTOR (in Surgery.) An instrument for drawing out extraneous bodies from a wound.

PROTRACTOR (in Surveying.) An instrument for laying down on paper the angles in a field. The protractor is a small semicircle of brass or other material, the limb or circumference of which is nicely divided into one hundred and eighty degrees.

PROV. An abbreviation for Proverbs.

PROVISO (in Law.) A condition inserted in a deed.

PROVOST. The mayor or chief magistrate of a city or town.

PROW. The head or forepart of a ship.

PROXY. One who acts or stands for another in his absence.

PRUNELLA. A preparation of purified saltpetre.

PRUNING. Lopping off superfluous branches of trees, in order to make them bear fruit the better; an important part of gardening, which can be learned only by practice and experience.

PRUSSIAN. A native of Prussia, which is a considerable kingdom of Europe, and formerly a part of Germany. Prussia is level, cold, and moist, but healthy. It is celebrated for its mines of amber on the coast of the Baltic. The inhabitants are distinguished for their bravery and martial spirit. The higher classes are well informed, but the lower are ignorant and degraded.

PRUSSIAN BLUE. A pigment of a dark blue colour, now procured from bullock's blood, carbonate of potash, vitriol of iron, alum, and muriatic acid.

PRUSSIC ACID. An acid procured from Prussian blue, which is one of the most violent poisons.

PSEUDO, i. e. FALSE. A prefix used to

many words, as pseudo martyr, a counterfeit martyr.

PTOLEMAIC SYSTEM. The system of astronomy laid down by Ptolemy, the celebrated astronomer and mathematician of Pelusium in Egypt. This system is founded on the hypothesis that the earth is immoveably fixed in the centre, not of the world only, but also of the universe, round which the sun, moon, planets, and stars, all move from east to west once in 24 hours.

PUBLICAN. A taxgatherer, or farmer of the public revenues, among the Romans; now the keeper of a public house or common place of entertainment.

PUBLICATION (in Literature.) The editing and printing a book; also, any book or pamphlet offered to the public.

PUBLISHER. One who puts forth any printed book to the world, particularly he who prints and publishes the manuscript copies of authors.

PUDDING STONE. A mineral aggregate, consisting of flint pebbles imbedded in a silicious cement.

PUFFIN. A sort of auk or sea-gull.

PULLET. A young hen.

PULLEY. One of the six mechanical powers, consisting of a small wheel, having a groove around it, and turning on an axis, as in the subjoined cut.

PULLEYS, SYSTEM OF, or POLYSPACTON. An assemblage of several pulleys combined together, some of which are in a block or case, which is fixed, and others in a moveable block that rises and falls with the weight.

PULP. The soft part of fruits, roots, &c.

PULPIT. A stage among the Romans, on which the actors performed their parts.

PULPIT (in the Christian Church.) An elevated desk where the sermon is delivered.

PULSATION. The beating of the pulse; also, a morbid sensation in the body like the beating of the pulse.

PULSE (in Anatomy.) The beating of the arteries, or their alternate contraction and dilatation, by which the blood is impelled forward to all parts of the body.

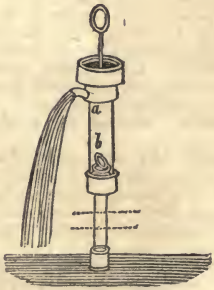
PULSE (in Physics.) The stroke with which any medium is effected by the motion of light, sound, &c.

PULSE (in Botany.) All sorts of grain contained in husks or shells.

PULVERIZATION. The reducing any solid substance to powder; or in regard to the soil, reducing it to a state of fineness fit for the reception of the seed, an important part of husbandry.

PUMICE STONE. A spongy, light, crumbling stone, which is cast out from volcanic mountains, and is also procured in melting glass.

PUMP. An important machine for extracting the air from a pipe placed in water, which, by pressure of the air, rises 33 feet in the vacuum. The same principle is applied to extract air from a close glass vessel, and it is then called an air-pump; *a* is a solid fitting piece drawn up from *b*, and leaving a vacuum from *b* to *a*, owing to which the air presses the water through the rising valve *b*, and the water rushing into the vacuum escapes at an orifice; *a* is then pushed down again and *b* closes, and on being raised again makes a new vacuum.



PUN. A playing with words which agree in sound but differ in sense, as if any one should play upon the word for the name of a man and the name of an animal.

PUNCH. A liquor made with brandy, spirits, water, sugar, and the juice of lemons or oranges; also, an instrument of iron or steel used in piercing holes.

PUNCHEON. A block or piece of steel having figures engraven on it, from which impressions are taken; it is used by goldsmiths,

cutlers, pewterers, &c. Also, a cask containing 120 gallons.

PUNCTUATION. That branch of grammar which teaches the discriminating use of certain marks adopted to distinguish the clauses of a period, sometimes with reference to the sense, and at others to the grammatical construction. Thus, a full point (.) closes a perfect sentence, a colon (:) indicates an adjunct, a semicolon (;) distinguishes its principal part; and a comma (,) parts subordinate to the semicolon. A sentence, which may include several periods, terminates a branch of the subject or argument. A dash (—) within a period, calls for attention to what follows, and a series of dashes indicates the energetic feeling of the writer. A question is indicated by (?), an exclamation by (!), and it is sometimes convenient to include a collateral circumstance in a parenthesis. ( ).

PUNCTURATION (in Surgery.) The operation of making punctures or small wounds in the skin with a needle, for relief in certain disorders, as rheumatism.

PUNT. A sort of flat-bottomed boat.

PUPA. The chrysalis or quiescent state of an insect.

PUPIL (in Anatomy.) The round aperture in the middle of the iris, the ball or apple of the eye, through which the light passes.

PUPIL. One under the care of a tutor.

PURGATION. The clearing one's self of a crime; also, a superstitious mode of trying persons accused of any crime, which was formerly in practice.

PURGATORY. A place where, according to the Roman Catholics, the souls of the faithful are purified by fire from the sins which they carry with them out of this life, before they are admitted to a state of perfect bliss.

PURITAN. A name given in derision to dissenters, who professed to have a purer doctrine and discipline than others.

PURPLE. A mixed colour of red and blue.

PURSER. An officer on board a man of war, who takes charge of the provisions, &c.

PUS. The corrupt matter issuing from a sore, which usually precedes the healing, and in such cases is termed healthy or good conditioned pus.

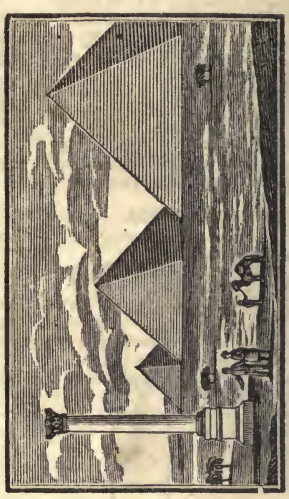
PUTREFACTION. The spontaneous decomposition of animal and vegetable matter, accompanied mostly with a fetid smell. Water and atmospheric air are active agents in this process of nature.

PUTTY. Whiting and linseed oil pounded together into a paste, which is used by glaziers in fastening the panes of glass, and also by painters in stopping crevices.

PUZZULANA. A gray kind of earth used in Italy for building under water.

PYRAMID (in Geometry.) A solid standing on a triangular, square, or polygonal basis, and terminating in a vertex or point at the top.

PYRAMIDS OF EGYPT. Noble monuments of Egyptian grandeur, about twenty in number, near Memphis. The largest is 481 feet in height, measured perpendicularly, and the area of its base includes eleven acres. They are monuments of vanity to celebrate some persons whose age and names are now forgotten. The engraving represents Pompey's Pillar at Alexandria, and the Pyramids near Cairo.



PYRITES. A mineral composed of iron and sulphur.

PYROLIGNEOUS ACID. An acid obtained from beech and other woods, which is a liquid of the colour of white wine, of a strong acid and slightly astringent taste. It is an antiseptic, and serves instead of wood smoke, of which it is the principle, for preserving animal substances.

PYROMETER. An instrument for measuring high temperatures, particularly the one invented by Mr. Wedgewood for determining the expansion of solid bodies by heat. This instrument is founded on the principle that clay progressively contracts in its dimensions in proportion as it is exposed to higher degrees of heat.

PYROPHORUS. A preparation from alum by calcination, which takes fire on exposure to the air.

PYROTECHNY. The science which teaches the management and application of fire in several operations, particularly in the construction of artificial fireworks.

PYTHAGOREAN SYSTEM. The system of astronomy taught by Pythagoras, a

Greek philosopher, contemporary with Daniel, Zoroaster, and Confucius, 600 B. C. It was founded on the hypothesis that the sun was a moveable sphere situated in the centre, round which the other planets revolved. This is now called the Copernican system, because it was revived by Copernicus.

PYTHIAN GAMES. Games celebrated in Greece every five years in honour of the Pythian Apollo at Delphi.

Q.

Q, the sixteenth letter of the alphabet, as a numeral stood for 500, with a dash over it, thus $\overline{Q}$, for 5000; as an abbreviation among the Romans for Quintus, &c. among Mathematicians, Q. E. D. Quod erat demonstrandum, i. e. which was to be demonstrated, &c.; among Physicians, Q. S. Quantum sufficit, as much as was necessary.

QUACK. A medical impostor.

QUADRANGLE (in Geometry.) A figure consisting of four sides and four angles.

QUADRANGLE (in Architecture.) Any range of houses or buildings with four sides in the form of a square.

QUADRANT (in Geometry.) An arc of a circle, containing the fourth part, or ninety degrees.

QUADRANT (in Astronomy and Navigation.) An instrument for taking the altitudes of the sun and stars. Quadrants are of different forms, but the most esteemed is Hadley's quadrant, as represented underneath. This consists of an octant, or the eighth part of a circle, the index, the speculum, two horizontal glasses, two screens, and two sight vanes.

QUADRATES (in Printing.) Square pieces of metal for filling up void spaces between letters, words, &c.

QUADRATIC EQUATION (in Algebra.) An equation in which the unknown quantity is a square.

QUADRATURE. The finding a square equal to the area of any figure given.

QUADRATURE OF THE CIRCLE. The finding some other right lined figure equal to the area of a circle, or a right line equal to its circumference, a problem which has employed the mathematicians of all ages, but as yet in vain. It depends upon the ratio of the diameter to the periphery, which was never yet determined in precise numbers. Archimedes showed that the diameter of a circle is to the circumference as 7 to 22, and the area of a circle to the square of the diameter as 11 to 14 nearly.

QUADRATURE OF CURVES. The finding a rectilineal space equal to a proposed curvilineal one.

QUADRILATERAL. Four sided; an epithet for a square, parallelogram, and other figures having four sides.

QUADRILLE. A game at cards played by four persons.

QUADRUPED. Any four-footed animal.

QUADRUPLE. Fourfold.

QUÆSTOR. An officer among the Romans, who had the charge of the public revenues.

QUAIL. A bird of game, nearly allied to the partridge, which has legs without a spur, and a short tail. Quails are migratory birds, and much less prolific than partridges, as they seldom lay more than six or seven whitish eggs.

QUAKERS. A religious sect of professing Christians, remarkable for their singular neatness of dress, and many other peculiarities. They are also denominated Friends, because they address all persons by the style of friend.

QUALITY (in Physics.) The property of any body which affects our senses in such manner as that they may be distinguished.

QUANTITY (in Physic.) Any thing capable of estimation or mensuration, which being compared with another thing of the same nature, may be said to be greater or less, equal or unequal to it. Natural quantity is that which nature furnishes us with in matter and its extensions.

QUANTITY (in Grammar.) An affection of a syllable, or that which determines a syllable to be long or short.

QUANTUM SUFFICIT, or Q. S. That which is necessary.

QUANTUM VALEBANT. As much as they were worth; applied to goods.

QUARANTINE. The length of time which every ship suspected of infection is obliged to remain in some appointed place, without holding any intercourse with the shore.

QUARRY. A place from which are obtained marble, freestone, slate, limestone, &c.

QUARTAN. A fever or ague that comes every fourth day.

QUARTER (in Arithmetic.) The fourth part of any thing.

QUARTER (in Commerce.) An English corn measure, containing eight bushels.

QUARTER (in Naval Architecture.) That part of a ship's hull which lies from the steerage to the transum.

QUARTER (in Geography.) A name for each of the four divisions of the globe.

QUARTER (in Military Affairs.) The sparing of men's lives, and giving good treatment to a vanquished enemy.

QUARTER DAYS. The days which, in England, begin the four quarters of the year, namely, the 25th of March, or Lady Day; the 24th of June, or Midsummer Day; the 29th of September, or Michaelmas Day; and the 25th of December, or Christmas Day.

QUARTERING (in Law.) The dividing the body of a traitor into four parts after it is beheaded.

QUARTERINGS. The partitions in an escutcheon, according to the number of coats of arms that are to be upon it.

QUARTER-MASTER. An officer whose duty it is to provide quarters or lodgings for the soldiers.

QUARTETTO. A piece of music for four voices.

QUARTO (in Printing.) The form of a book, the sheets of which are divided into four parts or leaves, making a square: it is mostly abbreviated in this manner, 4to.

QUARTZ. A sort of siliceous earth, consisting of silica, with a small portion of alumina and carbonate of lime. It is not fusible per se, but with soda it runs into a hard pellucid glass; when broken it becomes sand.

QUASSIA. A sort of plant, which is sometimes used by brewers in the stead of hops.

QUEEN CONSORT. The wife of a king, who, though a subject, has nevertheless several prerogatives above other women.

QUERCUS (in Botany.) The oak-tree, a genus of the monœcia polyandria class and order. The oak is preferred to all other timber for building ships.

QUICK. The young plants of the hawthorn, with which hedges are first made.

QUICKLIME. Unslaked lime.

QUICKSANDS. Sands that move and shake, into which those who pass over them are apt to sink.

QUICKSET HEDGE. Any live hedge, in distinction from that made of dead wood, but particularly that which is set with quick.

QUICKSILVER. The vulgar name for mercury. It is 14 times heavier than water, but fluid, though it freezes at 39° below zero, or at 71 below the freezing point of water.

QUIDNUNC. A curious person always asking after news.

QUID PRO QUO. An equivalent or return for any thing given.

QUILL. The feather of a goose or a crow, &c. particularly that of which, when cured, pens are made.

QUINCE. A fruit with a rough acrid taste.

QUINTESSENCE. A preparation of the essential oil of some vegetable substance incorporated with the spirit of wine.

QUIRK. An odd piece in a ground plot, which remains after the square has been formed.

QUI TAM (in English Law.) A sort of popular action brought at the suit of the king as well as the party.

QUITRENT. A rent payable by tenants, whereby they go quit and free from all services.

QUOITS. A game which consists in throwing a quoit or round iron to a certain distance.

QUIVER. A case for arrows.

QUORUM. Magistrates authorised to sit in sessions. Also, a legal number of a legislative or other body for the transaction of business.

QUOTIENT. What results from the division of one number by another, as $6 \div 2 = 3$, the quotient.

QUO WARRANTO. A writ to inquire by what authority, right, or title, any person or corporation holds a franchise, exercises an office, and the like.

R.

R, the seventeenth letter of the alphabet, as a numeral stood for 80, with a dash over it, $\bar{R}$, for 80,000; as an abbreviation, R. for Roma, Rex, and Royal; R. C. for Romana Civitas, &c.

RABBETING. The cutting of channels or grooves in a board.

RABBI. A doctor in the Jewish law.

RABBIT. An animal of the hare kind, but much smaller. There are two sorts, the tame and the wild rabbit. They are so prolific that in five years one pair would multiply to a million of rabbits.

RACCOON. An American quadruped, somewhat larger than a fox; its fur is deemed valuable next to that of the beaver; it lodges in hollow trees.

RACE. A sport which consists in running on foot, or with horses, as a trial of skill for a certain premium or reward.

RACK. An instrument for torturing persons suspected of crimes, which they generally confess, whether guilty or not, to escape the pains inflicted, and from the same cause often accuse innocent persons as participators. It is prohibited by the laws of England, but practised in effect when accused persons are cruelly used to extort confession.

RADIANT POINT. Any point from which rays proceed.

RADICAL. The distinguishing part of an acid, which unites with oxygen, and is common to all acids.

RADIUS (in Geometry.) The semi-diameter of a circle, or a right line drawn from the centre to the circumference.

RADIUS (in Anatomy.) A bone of the fore arm.

RAFT. A sort of float consisting of boards fastened together side by side, a mode of conveying timber by water.

RAFTERS. The pieces of timber which standing by pairs on the raising piece, meet in an angle at the top, and form the roof of a building.

RAG-ROWLEY, or RAGSTONE. A sort of stone of the siliceous or flint class.

RAIL. A migratory bird, which inhabits the sedgy places of Europe.

RAILS. A wooden fence for enclosing a place.

RAILWAY. A species of road or carriage way, in which the track of the carriage wheels being laid with bars or rails of wood, stone, or metal, the carriage runs with so much greater facility that one horse will perform the work of many. On some railways, the wagons are moved by steam instead of horses. It is contemplated to make railways in various parts of the U. States. Many have been commenced, and several are already completed. Their utility and superiority over canals, will, no doubt, cause their general adoption on most roads in the U. States, within a few years, where the travelling is great.

RAIN. The return to the earth, in condensed drops, of the aqueous vapours which are raised in the atmosphere by the sun and wind, the condensation being occasioned by a change in the general temperature, by a collision produced by contrary currents of air, or by a cloud passing into a cold stratum of air. The average annual depth of rains in England is about 32 inches; between the tropics it is above 108 inches, and near the Arctic circle only 16. In Peru, the Andes intercept the clouds, and the constant heat over sandy deserts prevents clouds from forming, so that there is no rain. Mountains receiving motion from the aqueous gas, and the clouds being driven to them by their intercepting the pressure of the atmosphere, much rain falls in such districts, and hence they are the sources of great rivers; from this cause the annual fall in Switzerland, is 40 inches.

RAINBOW. An effect on drops of rain, from the different refrangibility of the rays of light which produce different colours. The inner bow is produced by a refraction at the entrance of the drop, a reflection from its back, and a refraction at its exit, or by two refractions and one reflection; the outer bow by two refractions and two reflections within the drop; and, as much of the light is dispersed by the two reflections, so the outer bow is fainter than the inner bow. As all the drops in a shower are affected at the same time, so

all the colours of light are visible any where to a spectator whose back is to the sun, in circles which are from 55 to 52 degrees, and from 42½ to 40 degrees from the eye; but in the two bows the colours are reversed. The two bows may be imitated by small glass globes of water placed within the above angles from the eye, or by throwing up water with an engine. A line passing from the sun through the eye of the spectator goes to the centre of the bow, so that the height of the bow is inversely as the height of the sun; and, if the sun is more than 42 or 54 degrees high, there can be no bow. Of course, as it is a mere optical effect, depending on the position of the eye, no two persons can see the same bow. The moon, or any strong light, will make a coloured bow as well as the sun.

RAINBOW, MARINE. A phenomenon sometimes observed in an agitated sea, when the wind carrying the tops of the waves aloft, and the sun's rays falling upon them, they are refracted, &c. as in a common shower.

RAIN GAUGE. An instrument for measuring the quantity of rain that falls.

RAISIN. The grape perfectly ripe and dried either in an oven or by the heat of the sun: in this latter case they are richer and sweeter than when dried in an oven.

RAISING A SIEGE. Giving over the attack of the place.

RAKE. An implement of husbandry provided with teeth, for making the earth light and smooth.

RAKE (among Mariners.) So much of the hull of a vessel as hangs over both ends of her keel.

RAM. The male of the sheep.

RAMADAN. The Mahomedan fast.

RAMIFICATION. Any small branch issuing from a large one, particularly the very minute branches issuing from the larger arteries.

RAMMER. An instrument for driving stones or piles into the ground.

RAMPANT (in Heraldry.) An epithet for a beast standing directly upright on his hinder legs.

RAMPART (in Fortification.) A massy bank of earth raised round a fortress, to cover it from the fire of the enemy.

RAM'S HEAD. An iron lever to heave up great stones with.

RAM'S HEAD (among Mariners.) A great block or pulley into which the ropes called halliards are put.

RANA. The generic name for that class of animals in the Linnæan system of which the frog and the toad are the principal species. Both of them are perfectly harmless; but the toad is obnoxious for its ugliness. Toads live to a great age, and there can be no doubt but they are often found alive in cavities of stones, where they must have been entangled, at the formation of the stone, many centuries before, and have existed in a torpid state. The Surinam toad is seven inches long, and produces its young from cells in the back. Green frogs are eaten by the French. The bull-frog is so called from its noise, as loud as a bull, and often eighteen inches long, killing and swallowing poultry. The tree-frog lives in branches, upon insects.

RANCIDITY. The change which oils undergo, both in smell and taste, by exposure to the air, produced by the union of the oxygen of the air with the hydrogen of oil, promoted by the solar rays.

RANGE (in Gunnery.) The line which a shot describes from the mouth of a piece to the point where it lodges.

RANGE (among Mariners.) A sufficient length of the cable drawn upon the deck before the anchor is cast loose from the bow.

RANK (in Domestic Policy.) The situation which one man holds in respect to another.

RANK (in Military Tactics.) The straight line which the soldiers of a battalion or squadron make as they stand side by side.

RANSOM. Money paid for the redeeming a captive or the liberty of a prisoner of war.

RANUNCULUS. A perennial much cultivated in gardens, bearing a flower of a globular shape; also, the botanical name of a genus of plants, of which the globe ranunculus, the crowfoot, and the spearwort, are the principal species.

RAREFACTION (in Physics.) The act of causing a substance to become less dense; it also denominates the state of this lessened density. The term is more particularly applicable to elastic fluids, which expand so as to fill the vessel in which they are contained after part is extracted. The gas becomes rarefied in consequence of the partial exhaustion. Liquids are expanded by means of heat, and thence become thinner or more rarefied.

RASH. An eruption on the skin.

RASP. A steel instrument with sharp teeth, used in rubbing things smooth.

RAT. A well known animal that infests houses, barns, corn stacks, &c. The common rat is a native of America, as is also the water rat, which lives on the banks of rivers or ditches.

RATAFIA. A delicious liquor, made of the kernels of apricots, cherries, &c. steeped in brandy.

RATE (in Law.) A valuation of every man's estate, for determining the proportion that each is to pay to any tax.

RATE (in Naval Architecture.) The class or degree by which vessels are distinguished, as regards their force, burden, &c.

RATIEN. A thick woollen stuff.

RATIFICATION. The confirmation of a treaty.

RATIO. The mutual habitude or relation of two magnitudes of the same kind in respect to quantity; thus, the ratio of 2 to 1 is double, of 3 to 1 triple, &c.

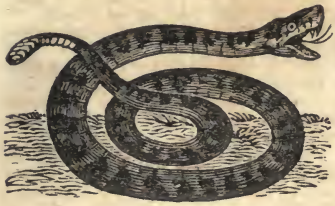
RATION. The share or proportion of meat, drink, forage, &c. given to soldiers or seamen.

RATIONALE. The account or solution of any phenomenon or hypothesis, explaining the principles, and every other circumstance on which it depends.

RATLINES (among Mariners called Ratlins.) Lines which make the ladder steps for going up the shrouds and futtocks.

RAT-TAILS (in Farriery.) Certain excrescences that gradually extend from the pastern to the middle of a horse's shanks; and which are thus denominated, from the resemblance they bear to the tail of a rat.

RATTLESNAKE. An animal of the serpent kind, from three to eight feet in length, having a tail furnished with a rattle, which it shakes when angry. It inhabits the woods of North and South America, and although its bite is poisonous, yet it does not attack any one unless provoked.



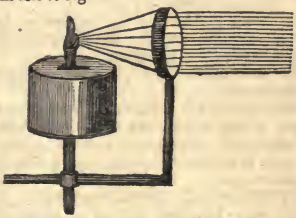
RAVELINS. Works raised on the counterscarp before the curtain of a place.

RAVEN. An elegant and very sagacious bird of the crow kind, often domesticated, and capable of being taught. It feeds on carrion, is long lived, and has an exquisite sense of smell.

RAY. A single radiation from a body which sends out emissions in all directions.

RAY. A genus of flat fish, with spiracles, of which there are nineteen species; the chief are the skate, thornback, the sting-ray, and the torpedo, possessed of galvanic arrangements and powers.

RAYS OF LIGHT. Whether light consists of travelling atoms, or atoms propelled from one to another, the effect is in straight lines; but, when these lines fall obliquely on any transparent surface, the line of direction is bent towards the perpendicular of the surface. If the surface, then, is circular, the obliquity varies, and the effect of all the bendings, is a convergence to one point, as when the rays enter parallel, as from the right to the left in the engraving; but if the rays diverge, as from the lamp to the glass lens, and the lamp is the centre of a double convex lens, or in the circumference of a plano-convex lens, then the rays go out parallel as from left to right.



RAZOR. An instrument for shaving.

REACTION (in Physics.) The resistance made by all bodies to the action or impulse of others that endeavour to change its state, whether of motion or rest.

READINGS. The different manner of reading the text of authors, particularly that of classical writers.

READINGS (in Law.) Commentaries or glosses on the law text.

REAGENT. The name given by chymists to such bodies as serve to detect the component parts of others; thus the infusion of galls is a reagent which detects iron by a dark purple precipitate.

REALGAR or RED ORPIMENT. A metallic substance, the sulphuret of arsenic, which is either native, and dug out of the earth in China, or it is factitious, procured by boiling orpiment in subliming vessels.

REAM. Twenty quires of paper.

REAPING MACHINE. An implement

of husbandry for cutting down grain, instead of reaping with a sickle.

REAR. A military term for behind, as rear-guard, a body of men that follows an army in its march to pick up stragglers and the like.

REAR. A naval term applied to the squadron which is hindermost.

REBATE AND DISCOUNT. A rule in arithmetic by which discounts upon ready money payments are calculated.

REC. or RECEIPT. An acknowledgment in writing of money received.

RECEIVER (in Law.) One who receives stolen goods; also, the name of some officers appointed to receive money, as the receiver of rents, or receiver of fines, &c.

RECEIVER (in Pneumatics.) The receiver of the airpump, a glass vessel placed on the top of the apparatus out of which the air is to be exhausted.

RECEIVER (in Chymistry.) A vessel for receiving any distilled liquor.

RECIPE. Directions for preparing any mixture or compound, as a physician's recipe, a cook's recipe, and the like.

RECIPROCAL. An epithet for what acts by alternation.

RECIPROCAL TERMS (in Logic.) Terms which having the same signification are convertible, as man and rational animal; for man is a rational animal, and a rational animal is man.

RECIPROCAL PROPORTION (in Arithmetic.) Is when in four numbers the fourth is less than the second by so much as the third is less than the first, and the contrary.

RECIPROCAL VERBS (in Grammar.) Such as reflect the action on the agent himself, as I love myself, thou lovest thyself, &c.

RECITATIVE. The rehearsal of any thing on a stage in musical cadence.

RECKONING or SHIP'S RECKONING. The account kept of a ship's way, by which it may be known at any time where she is; the account taken from the logbook is called the dead reckoning.

RECOGNIZANCE. A bond or obligation acknowledged in some court, or before some judge.

RECORD. A public act enrolled and preserved in courts of record.

RECORDER. An officer associated with the mayor of a town for the administration of justice according to the forms of law.

RECOVERY (in Law.) The obtaining of any thing by judgment or trial at law.

RECTANGLE. A figure having right angles, as a square, &c.

RECTIFICATION (in Astronomy.) The setting the globes in such position as to fit them for the performance of problems.

RECTIFICATION (in Geometry.) The finding a right line equal in length to a curve.

RECTIFICATION (in Chymistry.) The repeating a distillation or sublimation several times, in order to render the substance purer and finer.

RECTUM. The last portion of the large intestines.

RED. One of the simple or primary colours of bodies, which is distinguished into different shades, as scarlet, vermilion, crimson, &c.

REDEMPTION (in Law.) The right of re-entering upon lands, &c. that have been assigned or sold, upon reimbursing the purchase money. This right is sometimes termed the equity of redemption.

REDOUBT (in Fortification.) A small square fort, without defence but in front.

REDPOLE. A finch with a red spot on the crown.

REDSHANK. A bird of the curlew tribe.

REDSTREAK. A sort of apple.

REDUCTION (in Arithmetic.) A rule by which money, weights, or measures, are reduced to their least or greatest parts.

REDUCTION OF EQUATIONS (in Algebra.) The reducing them to the simplest state, or clearing them of all superfluous quantities.

REDUCTION (in Surgery.) An operation whereby a dislocated bone is restored to its proper place.

REDUCTION OF A DESIGN OR DRAUGHT, &c. The making a copy thereof, either larger or smaller than the original.

REED. A plant with a long, hollow, knotted stem, growing in fens and watery places.

REEFING. A sea term for the rolling or taking up a sail.

REEL. A machine turning round on an axis, on which lines of different kinds are wound.

RE-ENTRY (in Law.) The resuming or retaking possession of lands lately lost.

REFERENCE (in Law.) Referring a matter in dispute to the decision of an arbitrator; also, in the Court of Chancery referring a matter to a master.

REFERENCE (in Printing.) A mark in the text of a work referring to a similar one in the side or at the bottom of the page; also, the authorities referred to under such marks.

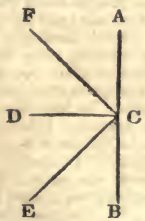
REFINING. The art of purifying any thing, but particularly the assaying or refining gold and silver by separating all other bodies from them.

REFLECTION. A term generally used in natural philosophy, to denote the rebound of the rays of light, heat, and sound, from an op-

posing surface. Polished surfaces reflect the light to the eye, and are, therefore, most generally termed reflectors or mirrors. Heat and sound are reflected without relation to the eye, and are returned from more rugged objects.

REFLECTION, Laws of. The reflections of light, heat, and sound, are found to obey the same laws as the rebound of elastic balls projected upon elastic surfaces. It is, therefore, that the particles of light and air have been treated as being reflected by virtue of their elasticity; although, on this principle, we cannot well account for the reflection of light from both surfaces of a glass mirror.

REFLECTION, Angle of. The law of reflection is generally expressed by the assertion, that "the angle of incidence is always equal to the angle of reflection," and is thus explained: If in the accompanying figure A B be a plane surface, and a ball at D be impelled towards C, perpendicular to that surface, in the direction D C, it will rebound from the point C back towards D, in the same line C D; but if the ball be projected to the same point C, from any point E, in a direction not perpendicular to A B, it will rebound on the other side of D C, towards F, in such a manner that E C D, which is termed "the angle of incidence," shall always be equal to F C D, "the angle of reflection." If instead of a ball, we suppose a ray of light to emanate from E, and fall upon C, it will be reflected in the same manner to the eye A F, along the line C F; in which direction only could an object, reflected from the point C, be visible. A pulse of air, which is sometimes a "ray of sound," follows the same law, and, if proceeding from E, would be reflected from C, directly in the line C F, in the points of which it would be heard, (if sufficiently strong,) as a reflected sound or echo. Some authors call E C B the angle of incidence, and A C F that of reflection; but the misnomer is of little consequence, for they, too, are equal. When the



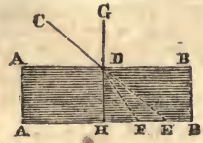
reflection is made from a concave, or from a convex surface, the angles of incidence and reflection are still equal; but they are measured by the tangent, or rather tangential plane, which touches the curve at the point on which the incident ray falls. We may add, that all terrestrial rays are divergent, as proceeding from a point; but those of the sun are, on account of his immense distance, considered as parallel. Convergent are such as meet in a focus, which they can only do by reflection or by refraction.

REFORMATION. The change from the Roman Catholic to the Protestant religion, which was first set on foot in Germany by Luther, but had been previously begun in England by Wickliffe, and completed by Henry VIII. who assumed the title of Head of the Church.

REFRACTION. The deviation of a ray of light from that right line in which it would have continued if not prevented by the thickness of the medium through which it passes. Thus, when we immerse one end of a rod, in a slanting direction, in a vessel of water, the part immersed appears as if it were bent, or broken, at the surface of the liquid. This phenomenon is the consequence of the rays of light, (by which the rod is rendered visible,) being bent in their course; the straight-lined direction, in which they originally issued, being changed by falling on another medium. Refraction is, therefore, used in natural philosophy as the denomination of that deviation from its course, which a body invariably experiences, when passing, in an oblique direction, from one fluid medium to another of a different density. The term is chiefly applied to the rays of light as they pass through transparent bodies.

REFRACTIVE POWER. The various transparent media refract the rays of light in different degrees. Let A B *a b*, in the accompanying figure, be a transparent body, on which a ray C D, incides from a luminous point C, upon the plane surface A B, at D. Were this ray to preserve its rectilinear direction, it would pass on to the point E; but meeting with another medium at the point D, it is reflected to F; so that the luminous point C, would be seen by the eye at F, and not at E. Draw the right line G H, perpendicular to A B, through the point of incidence D, which line G D H, is termed the axis of refraction. The angle C D G, is the angle of incidence, and H D F is the angle of refraction. These angles have a fixed relation to each other, in the same transparent body, whatever the angle of incidence may be, but that proportion is different in some bodies from what it is in others; and hence those bodies are said to have a greater or less refractive power. When the incident ray is perpendicular to the surface on which it falls, (as in the direction G D H,) there is no refraction. In every other direction, the ratio between the sines of the angles of incidence and of refraction is constant, and is termed the index of refraction. Thus, in water, if the sine of the angle of refraction be taken as unity, that of incidence will be about 1 1-3; and, therefore, the index of refraction in water is marked in the comparative tables as being 1.336. This

is called the law of the sines. In the passage of a ray of light from a dense to a rarer medium the refraction is reversed.



REFRACTION, Double. The refraction last mentioned is now termed Simple Refraction, because a theory has been formed of the laws of that double refraction, which was long ago observed in Iceland spar, but has since been found to take place in many other crystals, and may be even artificially communicated to glass; the ray, or pencil of light, when falling on a crystal of double refraction produces a double image. It separates into two parts or rays, one of which follows the ordinary law of the sines, and the other is refracted "according to a new or extraordinary law." These two pencils of light, into which the ray is divided, are termed by Dr. Brewster the ordinary ray, and the extraordinary ray.

REGALIA (in Law.) The rights and prerogatives of a king; also, the ensigns of royalty, the crown, sceptre, &c. worn by kings at their coronation.

REGENT (in Law.) One who governs during the minority of a king, or while he is incapable of reigning.

REGIMEN (in Medicine.) A rule of living as to diet, &c. prescribed for a patient.

REGIMEN (in Grammar.) The government of one word by another, as nouns by verbs, &c.

REGIMENT. A body of soldiers consisting of several companies, under the command of a colonel.

REGISTER (in Law.) A book of public records.

REGISTER (in a Church.) A book in which marriages, baptisms, and burials, are registered.

REGISTER (in Chymistry.) A contrivance in furnaces for increasing or diminishing the intensity of the heat.

REGISTER (among Letterfounders.) One of the inner parts of the mould in which the printing types are cast. Its use is to direct the joining the mould justly together again after opening it to take out the new cast letter.

REGISTER (among Printers.) Disposing the forms on the press so that the lines and pages printed on one side of the sheet fall exactly on those of the other.

REGLET (in Architecture.) A little, flat, narrow moulding in pannels, &c.

REGULAR (in Geometry.) A regular figure; one whose sides and angles are all equal.

REGULAR (in Grammar.) A regular verb, one that is conjugated by some rule.

REGULARS. Soldiers regularly disciplined and at the entire disposal of the government.

REGULARS (in the Romish Church.) Clergy that live under some rule of obedience.

REGULATOR OF A WATCH. A small spring belonging to the balance.

REGULUS. A star of the first magnitude in the constellation Leo.

REGULUS (in Chymistry.) An imperfect or impure metallic substance.

REINDEER. An animal of the deer kind, generally described as having horns ramose, recurvated round with palmated summits. When full grown, this animal, according to Pennant, is four feet six inches high, the body of a somewhat thick and square form, and the legs shorter than those of the common stag. The general colour is brown above and white beneath, but advancing in age it frequently becomes of a grayish white, and sometimes almost black. Both sexes are furnished with horns; those of the male are much larger and longer than those of the female. To the Laplander this animal is considered as the common substitute of the horse, the cow, the sheep, and the goat. The milk furnishes cheese, the flesh food, the skin clothing, the tendons bowstrings, and, when split, thread, the horns glue, and the bones spoons. A Laplander is sometimes possessed of a thousand deer. Their chief food is a species of moss, which covers vast tracts of the northern regions. This they find in abundance during the summer, but in winter their fodder is scarce, and then the greatest care and attention are required for their support. Trained when young to draw the sledge, their services are of the utmost importance when grown to maturity. They will then proceed about thirty miles per day without sustaining any injury, and sometimes when pressed, from fifty to sixty; but such journeys generally prove fatal to the animal. The reindeer is a native of the northern regions. In Europe its chief residence is Norway and Lapland. In Asia, Siberia and Kamtschatka. In America, Greenland and the neighbourhood of Hudson's Bay, but it is rarely found to the south of Canada. A few years since an attempt was made to introduce the breed into England, but success did not equal expectation. The common deer are more preserved in England than in any other country. They are said to have been first introduced into Scotland from Norway, by James I. and from thence into South Britain. They now abound in almost every country. Of these animals, under the generic term cervus, there are many species, differing from each other in habit and appearance, the particulars

of which may be found in works on natural history.

REJOINDER (in Law.) The defendant's answer to the plaintiff's reply.

RELATIVE (in Grammar.) A sort of pronoun which relates to some noun going before, as which and who.

RELEASE (in Law.) An instrument in writing, which discharges from obligation or imprisonment.

RELIEVO, or RELIEF (in Sculpture.) The projection or standing out of a figure above the ground or plane whereon it is formed. There are three kinds of relievo, namely, the alto, which projects as much as life; the basso relievo, when the work is raised but a little; and demi relievo, when one half of the figure rises.

RELIGION. That worship or homage which is due to God considered as Creator and Preserver, and, with Christians, as Redeemer of the world. The foundation of all religion is, that there is a God, and that for his infinite perfections and innumerable favours he requires some acknowledgment and service from his creatures. Hence religion necessarily supposes some intercourse between God and man. Religion has been divided into two branches, natural and revealed.

RELIGIOUS HOUSES. Convents, monasteries, nunneries, and the like, in the Romish Church, where persons live under certain rules, and are bound by their vows to lead a religious life: at the Reformation these religious houses were dissolved, and their wealth seized by Henry VIII.

REMAINDER (in Arithmetic.) The difference, or that which is left after subtracting one quantity from another.

REMINISCENCE. That power of the mind by which it recalls things which have been forgotten. In this respect it differs from memory with uninterrupted remembrance, while reminiscence allows intervals of forgetfulness.

REMITTANCE. A sum of money sent from a distance to discharge a debt.

REMORA. The generic name for the sucking-fish.

RENDEZVOUS. An appointed place of meeting, particularly for soldiers.

RENNET. The gastric juice and contents of the stomach of a calf, used in turning milk to curds.

RENT. The annual sum paid by an occupant for the use of lands or tenements.

REPEATER. A kind of watch which by means of a spring repeats or strikes the hour.

REPELLANTS. Medicines which drive the humours from the part where they have settled.

REPERTORY. A place where things are deposited; also, a book in which things are methodically entered.

REPLEVIN (in Law.) A release of cattle or goods that are distrained.

REPLICATION (in Law.) The plaintiff's reply to the defendant's answer.

REPORT (in Law.) A relation of cases judicially debated and decided upon.

REPRESENTATION (in Law.) The personating another, as in the case of an heir by representation.

REPRESENTATIVE (in Law.) One who represents the person of another, as a member of congress, &c.

REPRESENTATIVE GOVERNMENT. A government having national councils consisting of persons chosen by the people to represent their persons and consult their interests, such as the parliament of England, the chambers of France, the congress of the United States, &c.

REPRIEVE (in Law.) A warrant for suspending the execution of a malefactor.

REPRINT. A book printed again.

REPRISALS. The seizing the vessels or goods of merchant strangers as an equivalent for some loss sustained from the nation of which they are subjects.

REPRODUCTION. The power in some bodies of being restored by a process of nature after having been destroyed, as the reproduction of a tree from a slip, but more particularly the reproduction of animals which have been cut into pieces, as the polype and some other worms; also, the limbs of crabs, lobsters, &c. are reproduced when broken off.

REPTILES. The first order of animals under the class amphibia in the Linnæan system, comprehending the toad, the frog, the dragon, the lizard, crocodile, &c.

REPUGNANCE (in Law.) A contradiction of what has been said before, as in deeds, grants, &c. which makes them void.

REPULSION (in Physics.) A power in bodies of opposing the approach of other bodies, as oil and water, which for a time refuse to be incorporated; it is opposed to attraction.

RESCUE (in Law.) The violent taking away or causing to escape one that is taken by lawful authority.

RESERVE. A body of men kept apart in the day of battle, for some particular service as occasion may require.

RESIANT (in Law.) One residing in a certain place.

RESIDUARY LEGATEE. He to whom the residue of a personal estate is given by will.

RESIDUUM. The residue, or what is left after any chymical process.

RESIN, or **ROSIN.** A solid, inflammable substance, exuding from trees, as the common resin, or turpentine, from the pine; mastich, from the pistacea; sandarach, from the thuya; laudanum, from the white poppy, &c. Pure resins are soluble in alcohol, but the impure resins are not soluble.

RESISTANCE, or **RESISTING FORCE.** Any power which acts in an opposite direction to another.

RESOLUTION (in Mathematics.) A method by which the truth or falsehood of a proposition is discovered.

RESOLUTION (in Chymistry.) The reducing a body to its component parts.

RESOLUTION (in Surgery.) The dispersing of tumours.

RESOLUTION OF FORCES (in Mechanics.) The dividing any force or motion into several others in other directions, but which taken together shall have the same effect as the single one.

RESPIRATION. The act of receiving a portion of air into the lungs, and again emitting it. The blood of the veins is charged with a portion of carbon which it emits in the lungs, and this carbon uniting with the oxygen received in the lungs, forms carbonic acid gas, and is emitted, as is also nitrogen and azote. An ordinary sized man consumes about 46,000 cubic inches of oxygen per day, and makes 20 respirations in a minute. The quantity of carbonic acid formed during respiration is diminished after swallowing intoxicating liquors, or under a course of mercury, nitric acid, or vegetable diet.

RETAINER. An adherent or dependant.

RETAINING FEE. A fee given to a barrister to keep him from pleading for the other side.

RETALIATION. The act of returning like for like.

RETARDATION (in Physics.) The act of diminishing the velocity of a moving body.

RETE MUCOSUM. A mucous membrane between the epidermis and the cutis, which is one part of the integument of the skin.

RETICULA. A contrivance among astronomers for measuring the quantity of eclipses.

RETINA. The third or innermost membrane of the eye, which is the most important part of the organ of vision.

RETORT. A chymical vessel, with an open end, capable of bearing great heat. Any substance intended to be acted upon by great heat being put into it, is exposed in it over a lamp, or other fire, and on being volatilized, passes through the end into any other vessel adapted to receive it, as in the engraving.

RETREAT. The retrograde movement of any army or body of men.

RETRENCHMENT. Any work raised to cover a post.

RETRO. Backward; a prefix to many words, as retrocession, retrogradation, &c.

RETROCESSION OF THE EQUINOXES. The going backwards of the equinoctial points of the signs Aries and Taurus.

RETROGRADATION. A moving backwards.

RETURN. A certificate from sheriffs of what is done in the execution of a writ.

RETURN DAYS (in Law.) Certain days in term time for the return of writs.

RETURNS (in Commerce.) That which is returned, whether in goods or specie, for merchandise sent abroad; also, the return of money laid out in the way of trade.

REVELATION. The miraculous communications made by God of his will to man, which are contained in the Bible.

REVENUE (in Law.) The yearly profit that accrues to a man from his lands or possessions. In an extended sense, the public revenue, or the yearly income derived from the taxes and other sources for the support of the government.

REVERBERATORY. A very strong furnace used for calcining minerals, &c.

REVERSAL OF JUDGMENT. The making it void.

REVERSE OF A MEDAL. The back side, or that which does not contain the principal figure.

REVERSION (in Law.) Is when the possession of an estate which was parted with for a time returns to the donor or his heirs.

REVIEW (in Military Affairs.) The display of a body of men before the general, that he may judge of their condition.

REVIEW (in Literature.) A periodical publication which professes to give a criticism of publications as they appear.

REVISE (among Printers.) A second or third proof of a sheet to be printed; taken off in order to be compared with the previous proof, to see whether all the mistakes marked in it are actually corrected.

REVOCATION. The recalling or making void any grant.

REVOLUTION (in Astronomy.) The motion of any heavenly body in a circular line until it returns to the same point again.

REVOLUTIONIST. A favourer of political revolutions.

RHETORIC. In the most extensive sense of this word it denotes the art of composition, or that which enables us to apply language or speech to the best possible advantage. Take Cicero's laconic rules: "We are first to consider what is to be said; secondly, how; thirdly, in what words; and lastly, how it is to be ornamented."

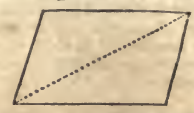
RHEUM. A thin serous humour that oozes occasionally from the glands about the throat and mouth.

RHEUMATISM. Wandering pains in the body, accompanied with heaviness, difficulty of motion, and sometimes a fever.

RHINOCEROS. A large beast in India, and the largest of all quadrupeds except the elephant, being about twelve feet long, having a horn in his front, and a skin, which lies in folds over the joints, and the body covered with a coat or shell which is so hard as to be bullet proof.

RHODODENDRON. A shrub bearing a very fine flower.

RHOMBOID. A quadrilateral figure, whose opposite sides and angles are equal, but it is neither equilateral nor rectangular.



RHOMBUS. A quadrilateral figure which is equilateral but not rectangular.

RHUBARB. A valuable medicinal root, growing in China, Turkey, and Russian Tartary, of which that from Turkey is the most esteemed. Rhubarb is also cultivated in English and American gardens, and makes delicious spring tarts.

RHUMB. A vertical circle of any place, or the intersection of part of such circle with the horizon.

RHYME. A sort of verse which terminates with words of the same sound.

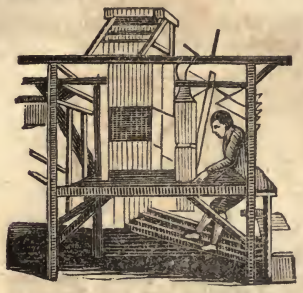
RIB (in Anatomy.) A side bone of the body.

RIB (in Carpentry.) Any piece of timber that strengthens the side.

RIB (in Shipbuilding.) The timber of the futtocks, when the planks are off, which resemble the ribs of the body.

RIBBON. A narrow sort of silk, chiefly used for head ornaments.

RIBBON LOOM. These looms, owing to the variety of patterns and labours, are exceedingly complicated in their construction; but a general notion of their form is given in the engraving.



RICKETS. A disease in the back bone incident to children.

RICE. A sort of esculent grain cultivated in the warm countries, which grows in husks of an oval figure. It is a nutritious food. It flourishes in moist situations, and its cultivation affords more food and as much employment as that of wheat in colder climates.

RICK-CLOTH. A tarpaulin which is set up by stacks or ricks of hay or corn while it is stacking. It is worked with pulleys.

RIDER. A leaf inserted in or attached to other leaves.

RIDER (in Commerce.) One who travels for a trading or mercantile house to collect orders.

RIDER (in Gunnery.) A piece of wood equal to the length of the body of the axletree of the gun carriage.

RIDER-ROLL (in Law.) A schedule or small piece of parchment added to some part of a roll or record.

RIDERS (in Shipbuilding.) Timbers bolted upon others to strengthen them.

RIDGE. The top of a house that rises to an acute angle; also, the top of the vertebra of the back.

RIDING SCHOOL. A public place where persons are taught to sit gracefully on a horse, and use the bridle with propriety.

RIFLE. A gun having spiral channels in the barrel.

RIFLEMEN. Soldiers armed with rifles.

RIGGING. All the cordage or ropes belonging to the different parts of a ship, by which the masts are sustained and ascended, and the sails managed. A knowledge of the names and uses of the several ropes, and the dexterous management of them, constitute an able sailor.

RIGHT (in Law.) Any title or claim by virtue of a condition, mortgage, &c.

RIGHT (in Geometry.) Straight, as a right line.

RIGHT ANGLE. The angle formed by one line falling perpendicularly upon another.

RIGHT SPHERE (in Astronomy.) That position of a sphere by which its poles are in the horizon.

RIGLET (in Architecture.) A flat, thin piece of wood, like what is designed for the frames of small pictures before they are moulded.

RIGLET (in Printing.) A thin slip of wood used in making up a form.

RIND. The skin of any fruit.

RINGDOVE. A variety of the common pigeon.

RINGHEAD. An instrument for stretching woollen cloth.

RINGLEADER. The head of a party or faction.

RINGWORM. A cutaneous disorder that comes on the skin in rings, and is contagious.

RIOT (in Law.) The forcible doing an unlawful thing by a number of persons assembled together for that purpose.

RISING (in Astronomy.) The appearance of any star or planet above the horizon, which before was hid beneath it.

RITUAL. A book directing the order and manner to be observed in celebrating religious ceremonies, and performing divine service in the church.

RIVER. A stream or current of fresh water flowing in a bed or channel, as the Amazon and La Plata, in South America; the Mississippi, Missouri, and St. Lawrence, in North America; the Kian Kiou, the Hoanho, the Lena, the Ganges, the Indus, and the Euphrates, in Asia; the Nile, in Africa; and the Volga, Danube, and Rhine, in Europe.

RIVET. A metal pin clinched at both ends.

RIX DOLLAR. A coin in Germany, worth about eighty cents.

ROACH. A fish of the carp kind.

ROAD. A highway, or a way prepared for travellers; it is either a carriage road, where carriages may pass, or a foot road or path for foot passengers. Military roads were

formerly constructed by the Romans for the passage of their armies, of which there are still vestiges in England. The old roads in England were only wide enough for two horses with panniers to pass abreast. There are at least 20,000 miles of turnpike road in Great Britain; that is, roads formed at the expense of individuals constituted by the legislature into joint stock companies, who levy tolls to defray the interest on the cost of formation and expenses of reparation. A similar practice prevails with respect to roads in the United States; but in the Netherlands and France, the public roads are under the immediate superintendence of a board, appointed by the respective governments. In the Netherlands a toll is collected at every league, but in France there is no toll.

ROAD. A sea term for any place fit for anchorage at some distance from the shore.

ROBIN. A pretty little bird about nine inches in length; the colour of the upper parts of the body are a dark brown, and the breast and neck of a dark orange. It is a bird of passage, and one of the earliest and sweetest songsters of spring.

ROCHE ALUM, or ROCK ALUM. A mineral salt of a very binding quality.

ROCK. A stony mass of which mountains are for the most part formed. Rocks are however to be met with in immensely large separate masses.

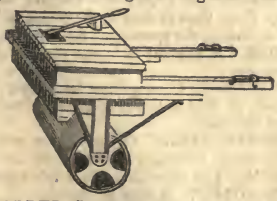
ROCKET. A sort of fireworks which when let off go to a very great height in the air before they burst.

ROCKBIL. A bituminous substance found in rocks.

ROE. An animal of the deer kind: also, the spawn of the fish; that of the males is called soft roe or melt, that of the females hard roe or spawn.

ROGATION WEEK. The week preceding Whitsuntide.

ROLLER (in Husbandry and Gardening.) A wooden or iron instrument of a circular shape, and fitted for rolling along the ground to level grass land, break the clods of arable land, and to bind the gravel in gravel walks.



ROLLER (in Surgery.) A long broad ligature for keeping the parts of the body in their places.

ROLLER (in Ornithology.) A beautiful bird the size of a jay, of the magpie species. The breast and belly are blue; the head green, and the wings variegated with blue, black, and white. A sort of naked tubercle or warts near the eyes, contribute to increase its beauty. The engraving represents the garrulous roller.

ROLLING MILL. A machine for working metals into plates or bars. This sort of mill is chiefly used for drawing out the iron bars after they have been manufactured into bar iron by the forge hammer.

ROMAN CATHOLICS. Those who hold the doctrines and submit to the discipline of the Romish church.

ROOD. The fourth part of an acre.

ROOK. A bird of the crow kind.

ROOT (in Arithmetic.) A number or quantity which multiplied by itself produces a higher power, as 2, the square root of 4 or the cube root of 8.

ROOT (in Botany.) That part of a plant which is under ground, and by which the plant derives its nourishment from the earth.

ROOT (in Grammar.) The original words from which others are formed.

ROPE. The larger kind of cordage, formed by the twisting of several strings of yarn together; the smallest sort of rope is called cord, and the larger kinds cable, which is used for the rigging of ships.

ROPEMAKING. The process of twisting yarn into ropes by means of a wheel.

ROPEYARN. The yarn of which ropes are formed.

ROSE. A shrub equally celebrated and admired by both ancients and moderns for its sweetness and its beauty. The most esteemed species of this favourite shrub are the hundred leaved rose, damask rose, Provence rose, white rose, moss rose, &c.

ROSE ACACIA. A prickly shrub, the flower of which resembles the rose in form.

ROSEMARY. A medicinal and fragrant plant.

ROSEWATER. Water distilled from roses.

ROSTRUM. A place in Rome where orations were made and pleadings carried on: it was so called from rostrum, the beak of a ship, because it was made of the beaks of the ships taken at Actium.

ROT. A disease among sheep, in which their lungs are wasted and their throats swollen.

ROTACEÆ. One of Linnæus' natural orders of plants, consisting of such as have one wheel-shaped petal without a tube.

ROTATION (in Geometry.) The circumvolution of a surface round an immoveable line, by which solids are conceived to be generated.

ROTTEN STONE. A mineral found in Derbyshire, which is used for all sorts of finer grinding and polishing, and sometimes for cutting of stones.

ROTUNDA, or ROTUNDO. A circular building at Rome, which was anciently called the Pantheon; also, any circular building.

ROTUNDITY OF THE EARTH. Roundness of form ascribed to the earth from various appearances which serve to prove it, as for instance, that the masts of a vessel come in sight before the hull is visible.

ROUGE. A red paint extracted from the plant called by botanists the carthamus tinctorius.

ROUGH-CASTING. A kind of mortar used as a covering for external walls, which is thrown on roughly instead of being plastered on.

ROUNDHOUSE (among Mariners.) The uppermost room or cabin in the stern of a ship.

ROUNDS. A watch commanded by an officer who goes in the night time round a fortress.

ROUND ROBIN. A paper containing a statement of grievances on the part of any number of discontented persons in the English army or navy, so called from their signing their names in a circular manner, that it may not be seen who signed first.

ROWEL. The pointed wheel in a spur.

RUBLE. A Russian coin; those of 1764, value seventy-two cents, and those of 1801, value sixty-two cents.

RUBRIC. The directions given in the Book of Common Prayer.

RUBY. A precious stone, next to the diamond in value. Its constituent parts are alumina, silica, carbonate of lime, and oxide of iron.

RUDDER. A piece of timber hung on hinges at the stern posts of a ship, which by being turned either way directs the course of the vessel.

RUDIMENTS. The first elements or principles of any art or science.

RUDOLPHINE TABLES. A celebrated set of astronomical tables, published by Kepler, and thus entitled in honour of the emperor Rudolph or Rudolphus.

RUFFED GROUSE. A bird about eighteen inches long, and nearly two feet wide when the wings are spread. The back, upper part of the wings, and neck, are variegated with black, reddish brown, pale brown and white spots. On each side of the neck there is a large black spot; a broad black stripe crosses the tail, on each side of which there is a narrow one of pale blue; the belly is pale blue, spotted with brown. This bird is generally found among mountains which are covered with evergreen trees, and this species is rarely seen in the vicinity of the other kinds of grouse. In the southern parts of the U. States this bird is called pheasant, and in the northern sections, partridge.

RULE OF THREE (in Arithmetic.) A rule which teaches by means of three numbers to find a fourth.

RULE or RULER. An instrument of wood or metal, marked off so as to be of use in mensuration.

RULE, SLIDING. A mathematical instrument serving to perform computations in gauging, measuring, &c. without the use of compasses, merely by the sliding of the parts of the instrument one by another.

RULES OF COURT. Certain orders made from time to time in the courts of law, for regulating the practice of the court.

RUM. A spirituous liquor distilled from sugar cane.

RUMEN (in Comparative Anatomy.) The paunch or first stomach of such animals as chew the cud.

RUMINATING. Chewing the cud, as cows, sheep, and some other animals do.

RUN. The inner part of a ship's bottom.

RUNDLET. A cask for liquors.

RUPEE. An Indian coin equal to forty-five cents.

RUSPONO. A coin of Tuscany, value four dollars and sixty cents.

RUSH. A kind of coarse grass that grows in watery lands. The flowering rush is a

perennial, and the sweet rush a tuberose plant, both of which are cultivated in gardens.

RUSSIAN. A native of Russia, which is the largest empire in Europe. Russia is generally a level country, distinguished for its vast plains and majestic rivers. The northern part is very cold and barren, the southern temperate and fertile. The commerce of Russia is extensive, and its exports consist of hemp, copper, and iron. The Russians are hardy and patient, but very ignorant and barbarous; and most of the lower classes are slaves to the nobles. The present emperor, however, is making great efforts to improve the moral condition of his subjects. The Russian empire embraces a great proportion of Europe and Asia, and extends into the northern parts of North America.

RUST. A crustaceous substance growing on iron, which is considered as a carbonate of iron.

RUSTIC. An epithet for a mode of building that imitates simple nature.

RYDER. A Dutch coin, value five dollars and fifty cents.

RYE. A kind of grain that in its growth resembles wheat; the flour of which is used for making bread, but it is much coarser than that made of wheat flour.

S.

S, the eighteenth letter of our alphabet, as a numeral stood for seven; in Music, as an abbreviation, stands for solo, in navigation for south, S. E. for south east, S. W. for south west, S. S. E. for south south east, S. S. W. for south south west.

SABBATH. The seventh day, observed by the Jews as a time of religious exercises and day of rest, in commemoration of God's resting on the seventh day after the work of the creation. The Jewish sabbath commences at sunset on the Friday and ends at sunset on the Saturday. Under the Christian system, it has been transferred to the first day of the week, to commemorate the resurrection of our Lord and Saviour Jesus Christ.

SABBATICAL. Belonging to the sabbath.

SABBATISM. Observance of the sabbath, superstitiously rigid.

SABLE (in Heraldry.) The tincture of black represented in engraving by perpendicular and horizontal lines.

SABLE (in Zoology.) An animal of the weasel tribe, having a dark tawny or snowy white body. It inhabits the northern regions, and is much esteemed for its fur.

SABRE. A sword or cimetar, with a very broad and heavy blade, thick at the back, and a little falcated or crooked towards the point. In the use of this weapon the Turks are said to be so exceedingly dexterous, as to cleave a man quite down with a single stroke.

SACCHARINE. Of the nature of sugar.

SACCHARINE ACID. An acid extracted from sugar by distillation.

SACKBUT. A trumpet for playing bass.

SACLACTIC ACID. A powder procured from the sugar of milk.

SACRAMENT. A sign of a holy thing containing a divine mystery, as the Lord's Supper, &c.

SADDLE. A seat for a horseman, fitted to a horse's back. It is supposed that saddles did not come into use till about the time of Constantine the Great, in the fourth century.

SADDUCEES. A sect among the Jews, which were esteemed as deists and freethinkers, and denied the resurrection and the existence of angels and spirits.

SAFETY-LAMP. A lamp invented by Sir Humphrey Davy for the use of miners in the

coal mines, to prevent the fatal explosions which have arisen from the use of common lamps. The safety lamp transmits its light through a cylinder of iron or copper wire gauze, the apertures in which are not above one twentieth of an inch square. As the fire damp is not ignited by heated wire, the thickness of the wire is of no importance. The principal parts of this lamp are a brass cistern containing the oil, the rim on which the wire gauze cover is fixed, an aperture for supplying oil, a central aperture for the wick, and the wire gauze cylinder.

SAFFRON. A bulbous root; also, the flower of the crocus; also, a substance formed from the stigmata of the crocus officinalis, dried on a kiln and pressed into cakes.

SAGITTA. A constellation in the northern hemisphere.

SAGITTARIUS. The ninth sign of the zodiac, marked thus (♐). It contains sixty-nine stars.

SAGO. A simple produced from the pith of a kind of palm growing in the East Indies, called by botanists the cycas circinalis.

SAIL. A large piece of canvass composed of several breadths sewed together, which when extended by means of lines on masts, catches the wind and drives the vessel along.

SAILING. The conducting a vessel from one port to another, which is the practical part of navigation.

SALAMANDER. A sort of lizard, which exudes from its pores a milky liquor, by which it is enabled for a time to resist the action of fire. From this virtue it was formerly supposed capable of living in fire.

SAL AMMONIAC. A fossil salt which was said to be dug out of the sands of Ammonia, in Libya, from which it took its name. There is no native salt of this name known to the moderns, but a factitious salt composed of a volatile alkali and the acid of sea salt, whence it is called the muriate of ammonia.

SALARY. The stipend or remuneration made to a man for his services, in distinction from wages.

SALE (in Law.) Transferring property from one to another upon a valuable consideration.

SALIENT ANGLE (in Fortification.) An angle projecting outwards.

SALIVA. An excretion from certain glands of the mouth, which serves to moisten the food before it is swallowed.

SALIVATION. Drawing humours out of the mouth by mercurial preparations; also, a preternatural increase of saliva.

SALLY. The issuing of the besieged from their fort and tower, and falling on the besiegers to cut them off.

SALLY PORTS. Doorways on each quarter of a fire ship, out of which the men make their escape into the boats as soon as the train is laid.

SALMON. A genus of fishes of the order abdominales. Gmelin enumerates 55 species, and Shaw 62, of which we shall notice but one kind, the common salmon. This abounds principally in the northern seas, which it quits at particular periods, to ascend rivers and deposite its spawn. It is esteemed for its flesh, which is delicious.

SALMON TROUT. A small species of salmon, the body of which is spotted with black.

SALOON. A very lofty, spacious hall, vaulted at top, and sometimes comprehending two stories or ranges of windows.

SALOP. A substance brought from Persia, and prepared, as is supposed, from a species of the plant botanically called orchis.

SALT. A name given by modern chymists to three sorts of substances, namely, acids, alkalies, and the compounds formed by acids in union with alkalies, earths, and metallic oxides. These latter are salts properly so called, and are sometimes distinguished from the two others by the name of neutral salts, as Epsom salts, nitre, &c. Salts are likewise distinguished according to the process by which they are prepared. Common salt, or bay salt, a muriate of soda, being a compound of muriatic acid and soda, is procured by evaporation from sea water. Essential salts

are drawn from the juices of plants by crystallization. Fixed salts are made by calcining or reducing the matter to ashes, then boiling it in water, straining off the liquor, and evaporating all the moisture, when the salt will remain in the form of a powder. Volatile salts are procured principally from animal substances, or the fermented parts of plants.

SALTPETRE, or NITRE. A nitrate of potash.

SALVAGE. A recompense allowed to such persons as have assisted in saving merchandises, ships, &c. from shipwrecks.

SALUTE (in Military Etiquette.) A discharge of artillery, or presenting of arms as a mark of honour or respect to some person of distinction.

SALUTE (in the Navy.) The discharge of ordnance, striking of colours, and the like, as testimonies of respect to the ships of an admiral or superior.

SAMARITANS. A sect among the Jews, who rejected all the scriptures except the five books of Moses.

SANCTUARY (in Law.) A privileged place, whither anciently offenders were allowed to fly, and to remain for some time under protection.

SANDAL. A rich kind of slipper made of gold, silk, or other precious stuff, and worn chiefly by Greek and Roman ladies. It consisted of a sole, having an opening at one extremity, to embrace the ancle, but leaving the upper part of the foot bare. Sandals are still worn in many countries, under many variations.

SANDAL WOOD. A beautifully coloured wood, hard, and fragrant in smell. It grows chiefly in India, and is valued for its medicinal virtues, and for inlaying in cabinet work.

SANDARACH. A resinous substance exuding from a tree that grows in Barbary.

SANDIVER, or GLASS GALL. A saline matter, which rises as a scum in the crucibles in which glass is made.

SANDPIPER. A sort of heath bird, whose back, head, and upper part of the neck, are of an iron colour, marked with large black spots; the lower part is white, with short dusky streaks; in size, it is somewhat larger than the lark. They are found on the British shores, but principally on the coast of Yorkshire, where they are taken in great numbers, and much esteemed at the tables of the luxurious.

SANDSTONE. A soft compound stone, consisting of grains of sand, &c. cemented together. The principal kinds are the grindstone and the filtering stone.

SANDWICH ISLANDER. A native of the Sandwich Islands, which are situate north of the equator, in the Pacific ocean, and are supposed to contain 400,000 inhabitants. Christian missionaries from the United States are now instructing the inhabitants, and their labours have been greatly blessed, the islanders having destroyed their idols, and great numbers of them embraced the Christian religion.

SANGIAC. The governor of a Turkish province.

SANHEDRIM. The supreme council or court of judicature among the Jews.

SAP. The juice or fluid part of a tree, which is a mucilaginous liquid, oftentimes strongly saccharine, so as to yield a large quantity of sugar, and also to furnish a strong fermented liquor.

SAPPERS. Soldiers attached to the engineers, and employed to assist in the labour of sapping.

SAPPHIRE. A hard and precious stone of a beautiful azure or sky-blue colour, nearly as transparent and glittering as the diamond.

SAPPING. A working underground to gain the descent of a ditch, counterscarp, &c.

SARCOCOL. A gum resin brought from Persia and Arabia in small grains, and supposed to be the product of a tree called by botanists the penæa sarcocolla.

SARCOPHAGUS. A sort of stone coffins, which consumed the bodies placed in them in the space of forty days. It was used by the ancients sometimes instead of burning the bodies by fire. That in which the body of Alexander the Great was placed is now in the British museum.

SARDONYX. A precious stone, consisting of a mixture of chalcedony and cornelian stone.

SARMENTOSÆ (in Botany.) One of Linnæus' natural orders, consisting of plants which have climbing stems and branches, like the vine.

SARSAPARILLA. The root of the rough smilax, a plant growing in North and South America. It has a bitterish taste, and is much used in medicine.

SASH (among Carpenters.) A frame of wood with panes of glass for a window.

SASH. A girdle round the waist, which in the army is worn by the officers.

SASSAFRAS. An American tree of the laurel tribe, whose bark has an aromatic smell and taste.

SATELLITE. A secondary planet moving round another, as the moon does round the earth, so called because it attends the primary planet from rising to setting, after the manner of the satellites who attended on the eastern princes as a guard. Jupiter has four such satellites, Saturn seven, and Herschel six. Their vicinity enables them to reflect solar light by night for the convenience of the inhabitants. Those of Jupiter may be seen with any moderate telescope. The first of Jupiter's moons goes round him in forty-two hours; the first of Saturn's in twenty-two and a half hours; the second in thirty-two hours; the third in forty-five hours; the fourth in sixty-five hours; and the fifth in four and a half days.

SATIN. A glossy kind of silk stuff.

SATIRE. Poetry, in which the follies and vices of men are wittily exposed, in order to their reformation.

SATURATION. An impregnation of a fluid with as much of any solid substance as it can dissolve. Thus water will dissolve about one third of its weight of common salt, and when it holds thus much in solution, it is said to be saturated with it, because if more be added it will remain solid.

SATURDAY. The last day in the week, so called from Saturn.

SATURN (in Heathen Mythology.) A son of Cœlus and Terra, and the god of time, commonly represented with a sickle, to denote the destroying power of time; sometimes with wings, to denote the swiftness of time, and with shackles, to denote the slow revolution and motion of the planet Saturn.

SATURN. One of the primary planets, 900,000 millions of miles from the sun, 79,000 miles in diameter, and is thirty years in performing his sidereal revolutions. He is marked by this character ♄. Saturn has seven moons, and is also surrounded by a double ring, 240,000 miles in diameter, visible with moderate telescopes, and very beautiful. Saturn used to be considered as the outermost planet, but Herschel has lately been discovered at double the distance; and, considering the middle distance of the sun to the nearest fixed star, as fifteen millions of millions of miles, there may be hundreds of planets undiscovered, for Herschel is not 2000 millions of miles distant, so that the space beyond Herschel to the middle distance is 80 times as great as the distance of Herschel from the sun.

SATURNALIA. A festival at Rome, in commemoration of the golden age, or the age of Saturn, when all men enjoyed their liberty, as the poets tell us.

SAUSAGE. A well known preparation of food, consisting of beef, pork, or veal, cut in small pieces, seasoned with pepper, sage, or other spice, and then closely stuffed into skins obtained from the intestines of animals.

SAVOY. A sort of winter cabbage with a crumpled leaf, which is greatly improved in flavour by being exposed to frost.

SAW-FISH. A fish which has a long beak or snout, with spines growing like teeth on both edges, and four or five breathing holes on the sides of the neck.

SAWYER. A mechanic employed in sawing timber. There are two sawyers to one piece, one of whom is in the pit, or below, and the other stands on the timber.

SAXIFRAGE. A medicine which has the

property of dissolving the stone in the bladder. A plant.

SAXON ARCH. A semicircular arch, which characterises the Saxon style.

SAXON STYLE. A mode of building first used by the Saxons in England. See ARCHITECTURE.

SCABIOUS. A plant cultivated in gardens, which bears a handsome brown flower.

SCABRIDÆ. One of Linnæus' natural orders, including plants with rough leaves, as hemp, fig, &c.

SCAFFOLD. A temporary erection either for workmen or for spectators.

SCALE (in Mathematics.) A most useful instrument in accurate drawing, made of any hard material. The principal divisions are half an inch, and the horizontal lines divide it into ten parts, or the 20th of an inch; while by sloping the lines in the left hand division, the tenths are divided into tenths of tenths, or 100ths of the half inch, by progressively ascending or descending.

SCALE (in Music.) A series of sounds rising or falling towards acuteness or gravity; in Geography, a scale of miles on a map, for measuring the distances of places; in Arithmetic, scale of notation, the order of progression on which any system of arithmetic is founded, as the decennary scale, which computes by tens.

SCALENE TRIANGLE. A triangle whose sides and angles are all unequal.

SCALES. Receptacles at the end of two equal levers, to determine the force of centripetal motion or weight of bodies, by standard bodies of stamped metal, in pounds, ounces, &c.

SCALLOP. A shell-fish.

SCALP. The skin that covers the skull bone.

SCAMMONY. A concreted resinous juice, light and friable, of a grayish brown colour, and disagreeable smell.

SCANNING. Measuring Latin verses by the syllables and feet.

SCANTLING. A piece of timber about fourteen feet long and three by four inches square.

SCAPEMENT (in Clock Work.) The manner of communicating the impulse of the wheels to the pendulum. Common scapements consist of the swing wheel and pallets only.

SCAPULA. The shoulder blade.

SCARABÆUS (in Natural History.) The beetle, a genus of insects of the order coleoptera, of which there are several hundred species. In England, the Scarabæus melotontha, or cockchaffer, is very common. The larva inhabits ploughed lands, feeding on the roots of corn; and the complete insect makes its appearance during the middle and decline of summer. This insect sometimes appears in such prodigious numbers, as almost to strip the trees of their foliage, and to produce mischiefs nearly approaching to those of the locust tribe.

SCARF. A sort of sash worn by officers in the army, and also by divines, as well as females, over the left shoulder and down the right sides.

SCARF SKIN. The first and outermost of the three laminæ of which the skin is composed.

SCARIFICATION. Incisions made in the skin, as in cupping.

SCARP. The slope on that side of a ditch which is next to a fortified place, and looks towards the field.

SCAVENGER. A person whose duty it is to see that the streets are cleansed from filth and dirt.

SCENOGRAPHY. The perspective representation of a body on a plane.

SCHEDULE (in Law.) A scroll of paper or parchment appended to a will or any other deed; also, an inventory of goods, &c.

SCHIST. A name given to different kinds of stones, but particularly those of the argillaceous kind.

SCHOLIUM. A note or annotation on an ancient author.

SCHOOL. A place set apart for the instruction of youth.

SCHOOL (in Philosophy.) A system of doctrine as delivered by particular teachers, as the Platonic school, the school of Aristotle, &c.

SCHOOL (in Theology.) The age of the church and the form of divinity that succeeded the fathers.

SCHOOL (among Painters.) The style and manner of painting among the great masters of the art at any particular period, as the Italian, Flemish, Dutch, Spanish, and English schools.

SCHOONER. A small, fast sailing vessel, with two masts.

SCIAGRAPHY. The art of finding out the hour of the day or the night by the shadow of the sun or the moon.

SCION. A graft or young shoot of a tree.

SCIOPTIC. A sphere or globe of wood, with a hole in which is placed a lens, so constructed that it may be turned round every way, and used in making experiments in a darkened room.

SCIRE FACIAS. A writ of execution.

SCIRRHUS. A hard tumour of some gland.

SCITAMINEÆ. One of Linnæus' natural orders, comprehending ginger, cardamomom, spices, and other aromatic plants.

SCORING (in Music.) Collecting and arranging the several detached parts of a piece into a certain order.

SCORPIO. One of the twelve signs of the zodiac, marked thus ♏.

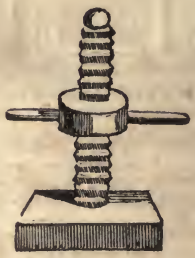
SCORPION. An insect having eight legs, which resembles the lobster. It is armed with a pungent sting, the puncture of which is generally fatal.

SCREEN. An implement in husbandry, which consists of a frame and wire work, with

which corn is cleared of the dust and the dross grain.

SCOUTS. Horsemen sent out some distance before the army, in order to discover the movements of the enemy.

SCREW. One of the six mechanical powers, consisting of a spiral thread or groove cut round a cylinder; when the thread is on the outside, it is a male or convex screw; but when it is cut along the inner surface of the cylinder, it is a female screw otherwise called a nut.



SCREW DOCK. A late invention for raising vessels out of the water for the purpose of repairing. It consists of a large platform placed between two piers or wharves, to which large screws are attached, by which the platform is sunk under water, and the vessel brought upon it, where she is so stayed and supported, that when the platform is raised to the surface of the water, the vessel retains her upright position, and can be conveniently and expeditiously repaired; after which she is again lowered into the water by means of the screws sinking the platform sufficiently to admit her floating off.

SCRIBE. A doctor in the Jewish law, whose business it was to write and interpret the scripture.

SCRIBING (among Carpenters.) Fitting the edge of a board to the side of another.

SCRIP. A bag formerly carried by pilgrims.

SCRIP (in Commerce.) That part of any loan which remains unpaid for by the subscribers.

SCRIVENER. One who draws up and engrosses writings.

SCROFULA. A disease consisting of hard swellings in the glandules of the neck and ears. This disease the kings of England pretended, for 800 years, to cure by touching. Lists of pretended royal cures were published by the king's physicians, amounting to hundreds per annum. A regular form of prayer attended the touching, and it was seditious to doubt this authorized imposture. The Guelphs

discontinued the practice; but it was used by Queen Anne, and by the exiled Stuart family, down to 1800.

SCRUPLE. A small weight equal to twenty grains.

SCRUPLES ECLIPSED. That part of the diameter of the moon which enters the shadow.

SCUFFLER. An implement in agriculture, intended to effect the same purpose as that of a hoe in gardening. Its feet are like those of the dove; it is used on strong land to pulverize it, and cut up the weeds.

SCULPSIT, or SCULP. Annexed to an engraver's name, denotes that he engraved or carved the piece.

SCULPTURE. An art which comprehends not only carving in wood, stone, or marble, but also, enchasing, engraving in all its kinds, and casting in bronze, lead, wax, &c.

SCULL. To impel a boat by moving and turning an oar over the stern.

SCURF. A scaly swelling raised on the skin of the head.

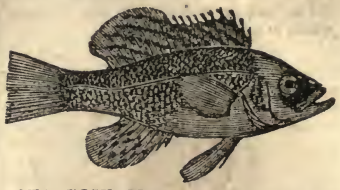
SCURVY. A disease, the symptoms of which are yellow spots on the hands and feet, weakness in the legs, a foul breath, &c. It arises from eating too much salt provisions.

SCYLLA. A rock in the sea between Sicily and Italy, which was very formidable to the mariners among the ancients. It was opposite to the whirlpool Charybdis.

SCYTHE. An instrument for mowing. It consists of a thin steel blade attached at right angles to a handle, of six or eight feet long. For cutting wheat there is frequently the addition of what is called a cradle.

SEA. The general name of an expanse of water, subordinate to the word ocean, as the Baltic Sea, Mediterranean Sea, Black Sea, Red Sea, &c. These enclosed seas are not subject to tides, which are created by a more general mundane action and reaction, with reference to the moon. The water is combined with 1.35 muriate of soda, a 250th muriate of magnesia, a 400th Epsom salts, and an 800th of gypsum. As the action of light is obstructed by particles of water, it ceases in a thickness of 723 feet: consequently, the bottom of deep seas is in darkness. The depth of the sea is unequal, sometimes two or three miles, in general from 60 to 150 fathoms, but supposed to average half a mile.

SEA BASS. A dark, striped fish, with a large head, weighing from two to four pounds. It is never found in fresh water.



SEA COW, Morse, or Walrus. A long, harmless, and affectionate, but awkward creature, which inhabits the northwest shores of America, and is distinguished by two prominent tusks in the upper jaw. It is sometimes called the sea horse.

SEAL, or Sea Calf (in Zoology.) A harmless and sagacious amphibious animal, inhabiting the shores of Kamtschatka and the neighbouring islands. They suckle their young, and have a face and head sometimes slightly resembling the human species, by whom they are put to death for their skins and oil. The ursine seal is even more social and sagacious than the common seal, living in families and regulated societies. Seals have given rise to the stories of mermaids.

SEAL. A piece of metal having coats of arms or some other device engraven upon it; also, the print in wax made by the seal.

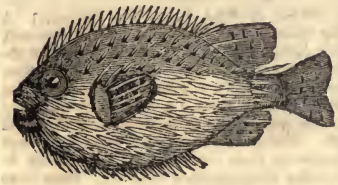
SEAL (in Law.) The impression or device printed on wax, which is put to any deed, public document, &c. by way of ratification.

SEA HORSE. A small fish of a curious shape. The length seldom reaches twelve

inches; the head bears some resemblance to that of a horse, whence originates its name. A long back fin runs from the head to the tail, which is spirally covered.

SEALINGWAX. A hard wax made of gum lac, resin, &c. which is used in sealing letters, &c.

SEA PORCUPINE. A singular fish, which varies in size. It is found in most seas. When enraged it puffs itself up so that its body is round like a globe.



SEASONS. The four portions of the year, namely, Spring, when the sun enters Aries; Summer, when he enters Cancer; Autumn, when he enters Libra; and Winter, when he enters Capricorn.

SEA STAR, or STAR FISH. An animal inhabiting the sea, which adheres to the bottoms of ships. It is of a reddish yellow colour, and is furnished with five rays. If cut

into pieces, each piece becomes a whole animal.

SEA-URCHIN. An animal inhabiting the sea, which is armed with five sharp teeth.

SEAWEEDS. A sort of herbs found floating on the surface of the sea, which are botanically called algæ.

SEAWORTHY. An epithet for a ship fit for a voyage.

SECOND. Any right angle that cuts another, whether a right line or a curve.

SECOND (in Geometry and Horology.) The sixtieth part of a minute, marked thus (″).

SECONDARY CIRCLES. Circles which intersect the six greater circles of the sphere at right angles.

SECONDARY PLANETS. Those which revolve as satellites round the primary planets.

SECRETARY. One who is employed in writing letters, &c. for a person.

SECRETION. The separation of some fluid from another in an animal or vegetable substance by means of glands.

SECT. A religious party.

SECTION. The cutting of one plane by another.

SECTOR. A mathematical instrument used in measuring proportional quantities.

SECTOR OF A CIRCLE. That portion of a circle comprehended between two radii and an arch.

SECUNDUM ARTEM. By the rules of art.

SECULAR GAMES. Games among the Romans, so called because they were celebrated but once in a seculum or age.

SECULAR PRIEST. One who has not taken monastic vows.

SEDAN. A close chair in which persons are carried by men.

SEDIMENT. Whatever settles or sinks to the bottom of a fluid.

SEED. The essence of the fruit of every vegetable, containing the rudiments of the new vegetable.

SEGMENT. Any part of a line in a triangle or other figure cut off by a perpendicular let fall upon it.

SEGMENT OF A CIRCLE. A part cut off by a chord, or that portion comprehended between an arc and a chord.

SEIGNORY. The jurisdiction and power of a lord.

SEIZING. A sea term for binding two ropes together.

SEIZURE (in Law.) An arrest of merchandise that is prohibited or otherwise forfeited.

SELENIUM, or SELENITE. The sulphate of lime.

SELENOGRAPHY. A description of the face of the moon.

SEMI. A prefix to many words, signifying half, as semicircle, half a circle; semicolon, half a colon.

SEMIMETALS. Fossil bodies not malleable, yet in some measure to be fixed by fire.

SENIORITY. Priority of birth.

SENIORITY. (among Military Men.) Priority in the time since the raising of any regiment, or an officer's receiving his commission, &c.

SENSE. That faculty of the soul whereby it perceives external objects by means of impressions made on particular parts of the body, called the organs of sense, and then conveyed to the sensory; the senses are five, namely, seeing, hearing, smelling, taste, and feeling.

SENSIBLE HORIZON. See HORIZON.

SENSITIVE PLANTS. Plants of the mimosa tribe, which have the extraordinary property of closing on being touched.

SENTICOSÆ. One of Linnæus' natural orders of plants, including the rose, brier, hawthorn, &c.

SENTINEL. A private soldier placed to watch at some post.

SEPIARIÆ. One of Linnæus' natural orders of plants, including such as grow wild in hedges, or are used for hedges, as the brier, privet, &c.

SEPOYS. Natives who serve in the army in India.

SEPTEMBER. The ninth month of the year, so called because it was Septimus Mensis, the seventh month of Romulus' year.

SEPTENNIAL. Occurring once in every seven years.

SEPTUAGESIMA. The first Sunday in Lent.

SEPTUAGINT. The Greek translation of the Bible from the Hebrew into the Greek by seventy-two Jewish interpreters, by order of Ptolemy Philadelphus, king of Egypt.

SEQUESTRATION (in Law.) The separating a thing in controversy from the possession of both parties, till the right be determined by course of law.

SERAGLIO. The palace of the grand seignior.

SERGE. A woollen stuff manufactured in a loom.

SERGEANT, or SERGEANT AT LAW. In England, the highest degree taken in the common law, answering to that of doctor in the civil law.

SERGEANT (in Military Affairs.) An inferior officer appointed to teach the soldiers their exercise.

SERGEANTS AT ARMS. Officers appointed to attend legislative bodies, arrest offenders, and the like.

SERIATIM. Successively, in order.

SERIES. A rank or progression of quantities proceeding by some rule, as in arithmetical progression by addition, 1, 3, 5, &c.; and in geometrical progression by multiplication, as 2, 4, 8, 16, &c.

SERIES, INFINITE. A series consisting of an infinite number of terms, to the end of which it is impossible to come.

SERPENTES. An order in the Linnæan system under the class amphibia, including animals which have no feet, fins, nor ears, and are cast naked on the earth without limbs, but frequently armed with a deadly poison. Under this order are the seven genera, namely, the boa constrictor, the rattlesnake, the viper, the snake, the acrochordus, amphisbæna, and coecilia.

SERVICE-TREE. A tree, the fruit of which is highly astringent.

SERUM. A thin transparent liquor which forms a part of the blood, and also of milk.

SESSION. A sitting of justices in court upon their commission, as the session of oyer and terminer, &c.

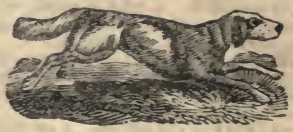
SET OFF (in Law.) When the defendant acknowledges the plaintiff's demand, but sets up a demand of his own, to set off or counterbalance the debt either wholly or in part.

SETON. A sort of issue in the neck, formed by means of horsehair or fine silk drawn through the skin.

SETS (among Gardeners.) The young plants of white thorn or other shrubs, which are raised as quick for hedges.

SETTING. The sinking below the horizon, applied to any star or planet.

SETTING DOG or SETTER. A sporting dog who scours the field and starts game for sportsmen.



SEWER. A passage or canal under ground to carry off water.

SEXAGENARY. One who has lived sixty years.

SEXAGESIMAL ARITHMETIC. A mode of computing by sixtieths, such as the division of a degree into sixty minutes, a minute into sixty seconds.

SEXAGESIMA SUNDAY. The sixtieth day before Easter.

SEXTANT. The sixth part of a circle, or an arc comprehending sixty degrees; also, an astronomical instrument like a quadrant, except that its limb only comprehends sixty degrees.

SEXTON. A church officer who digs the graves, and assists the minister at funerals.

SEXUAL SYSTEM (in Botany.) The system of classifying plants, invented by Linnæus, and formed from the parts of fructification, as the stamens and the pistils. From the number of stamens are formed the classes monandria, diandria, triandria, &c. for such plants as have one, two, three, or more sta-

mens; from the number of pistils are formed the several orders under these classes, as monogynia, digynia, trigynia, &c. for such plants under each class as have one, two, three, or more pistils.

SHACKLES. A sort of fetters for malefactors, which confine the legs; also, for animals that go astray.

SHAD. A fish weighing from two to six pounds; it enters the rivers in England and America, in the spring, in immense numbers, and is excellent food, either fresh or salted.

SHADDOCK. A shrub, the fruit of which resembles a lemon.

SHADOW (in Optics.) A privation or diminution of light, by the interposition of an opaque body.

SHADOWING (in Painting.) The art of duly representing light and shade in a picture.

SHAFT. The body of a column.

SHAFT (among Miners.) A hole like a well, which miners make to free the works from the springs that are in them.

SHAGREEN. A kind of rough-grained leather, prepared from the skin of the hound-fish, and used for watch cases, &c.

SHALE. A black, slaty substance, or a species of clay concreted into a stony consistence, and impregnated with a considerable quantity of bituminous matter.

SHAMMY or CHAMOIS. A soft leather prepared from the skin of the chamois goat.

SHAMROCK. A name in Ireland for the trefoil or three leaved clover.

SHANK. That part of the fore leg of a horse that is between the knee and the second joint next the foot; also, the long and cylindrical part of different things, as the shank of a candlestick, &c.

SHARK. A voracious fish, common in most seas, some species of which are said to weigh 3000 or 4000 pounds. They devour almost every animal substance, and the larger kinds are capable of swallowing a man. When seizing its prey it is obliged to turn on its side.

SHARP. A half note, signifying an elevation, marked thus:

SHEARS. A tool made in the form of scissors, for clipping hedges, &c.

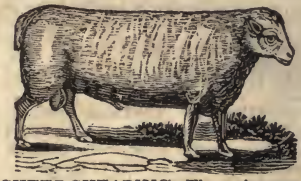
SHEATH. A case for a knife or sword.

SHEATH-BILL. A bird inhabiting the South Sea islands, which has the upper mandible of its bill covered with a sheath.

SHEATHING. The covering nailed on a ship's bottom, to protect the planks from worms.

SHECHINAH (in Jewish History.) The name of that miraculous light, of visible glory, which was a symbol of the divine presence.

SHEEP. A domestic animal, much valued both for its flesh and its wool. Of the different breeds of this animal, the Merino, South Downs, Leicester, and Norfolk, are the most esteemed. It is one of the most profitable part of the live stock of a farm, where the lands are dry. The engraving represents one of the Leicester breed; they are, however, too fat for general consumption.



SHEEP-SHEARING. The spring season, when the fleeces of the sheep are sheared or cut off.

SHEET. A large linen cloth laid on a bed.

SHEET. A breadth of paper, that admits of being folded into a given form. The twenty-fourth part of a quire.

SHEET (among Mariners.) A rope fastened to the corner of a sail.

SHEET-ANCHOR. The largest anchor in a ship.

SHEICK. The chief of a tribe among the Arabs.

SHEKEL. A Jewish silver coin, worth about sixty cents.

SHELF (among Miners.) A hard coat of earth, which lies under the mould.

SHELL. A crustaceous covering of fishes or fruits.

SHELL-FISH. Fish invested with a hard covering, either testaceous, as oysters, or crustaceous, as lobsters.

SHERBET. A drink composed of the juice of lemons or oranges, mixed with water, sugar, and some drops of rose water.

SHERIFF. The executive officer of the law, and keeper of the courts and jails, which it is his duty to visit often, and correct malpractices.

SHIELD. A weapon of defence, borne on the arm, to turn off lances; also, another name for an escutcheon, by which it is represented.

SHIP. A general name for all large vessels which navigate the seas, particularly those equipped with three masts and a bowsprit, the masts being composed of a lower mast, topmast, and topgallant mast, each of which is provided with yards, sails, &c. They have increased in bulk from the open galleys of the ancients of 50 or 60 tons, to a timber ship of 5000. A first rate man-of-war is from 2500 to 2700 tons, and carries 120 guns, 24 and 32 pounders, with a crew of 900 men; the length of her gun-deck being 205 feet, and breadth 53 feet, the mainyard 106 feet long, main-mast 124 feet, and fore-mast and mizen-mast each 112 feet high.

SHIP-BUILDING. The practical branch of naval architecture, or the art of constructing vessels according to certain draughts.

SHIPPING. A general term for whatever relates to ships.

SHIPS OF WAR, commonly called MEN OF WAR. Vessels properly equipped with artillery, ammunition, and all the implements of war necessary for attack and defence. Ships of the first rate or class mount from 100 to 110 guns and upwards; of the second, from 90 to 98 guns; third rate, from 64 to 74 guns; fourth rate, from 50 to 60 guns; fifth rate, from 32 to 44 guns; and sixth rate, from 20 to 28. Vessels carrying fewer than 20 guns are denominated sloops, cutters, fireships, and bombs.

SHIP-WORM. A testaceous animal, the teredo of Linnæus, that adheres to the bottom of vessels coming from India, and does much damage.

SHIPWRIGHT. One who follows the art of building ships.

SHIRE. The Saxon name for a county.

SHOAL. A shallow piece of water, or a shallow part of the sea near the coast.

SHOE. A covering for the foot, made of leather; also, the piece of iron nailed to a horse's foot, or under a sledge, &c.

SHOE (among Mariners.) A small block of wood on the back of an anchor.

SHORE. A tract of land near the sea.

SHORES. Props set up obliquely to support a building.

SHORL. A mineral of a black colour.

SHORTHAND, otherwise called STENOGRAPHY. An abbreviated form of writing.

SHOT. A general name for all sorts of balls used in firearms.

SHREW. An animal of the mouse kind, but from the structure of its teeth it is presumed to be carnivorous.

SHRIKE. The butcher bird.

SHRIMP. A small sea fish, resembling a lobster; it is used as bait for catching fish.

SHROUD. A sea term for great ropes that come down both sides the masts.

SHROVE-TIDE. The time just before Lent.

SHRUB. A small low tree, between a bush and a tree. It is mostly an ornamental plant, bearing beautiful flowers, as the acacia, lilac, &c.

SIBERIAN. A native of Siberia, which is a part of the Russian empire, in the northern part of Asia, larger than the whole of Europe. Siberia is a cold, barren country, similar to Lapland in climate; many parts of it are immense plains, generally covered with snow. To this country Russia sends her exiled state criminals.

SIBYLS. Prophetesses, or such as professed to be so, among the ancient Romans and Greeks; and even to this day Asiatic and African sovereigns consult astrologers in like manner. The Romans preserved their books

with great care, and consulted them only on great occasions.

SIDEREAL. Pertaining to any star or planet, as a sidereal day, the time in which any star appears to revolve from the meridian to the meridian again, which is 23 hours 56 minutes 4 seconds and 6''' of mean solar time, there being 366 sidereal days in a year, or in the time of the 365 diurnal revolutions of the sun. Also, relating to the fixed stars, or suns of systems, by observations on which, it appears that between 1700 and 1800, not less than 13 of these suns have been observed to disappear, 40 have become greater or less, and 10 new ones have appeared to come into existence. More active observations will, probably, extend the numbers in every succeeding century.

SIEGE. The encampment of an army before a fortified place, with a design to take it.

SIENITE. A compound granular aggregated rock, composed of felspar and hornblende, with a portion sometimes of quartz and black mica.

SIEVE. An instrument for separating the fine from the coarser parts of powders, liquors, grain, &c.

SIGHTS OF A QUADRANT, &c. Thin pieces of brass raised perpendicularly on its side.

SIGN (in Arithmetic and Algebra.) Any mark used in operation, as + for addition, — for subtraction, × for multiplication, ÷ for division, = for equality.

SIGNALS. Notices given to a distant observer, for the purpose of communicating intelligence.

SIGNATURE. The signing any paper, or putting any mark under a writing.

SIGNATURE (among Printers.) A letter of the alphabet, or a figure, put at the bottom of the page in each sheet.

SIGNET. A seal set in a ring; also, a king's seal, wherewith his private letters are signed.

SIGN-MANUAL (in Law.) The signature to any bill or instrument in a king's own handwriting.

SIGNS OF THE ZODIAC. Figures fancifully inserted among the stars in the twelve divisions of the part of the heavens in which the sun, moon, and planets move; and curious because 3000 years old.

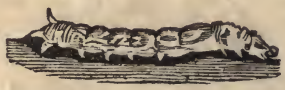
SILICA. One of the primitive earths, which forms one of the constituent parts of all stones, and is found in greatest abundance in agates, jasper, flints, quartz, and rock crystal. In the latter, it exists nearly in a state of purity. When mixed with soda, and exposed to a great heat, it forms glass.

SILIQUOSÆ. One of the Linnæan natural orders of plants, including those which have siliquæ or pods for their seed vessels, like the pea, bean, lupin, &c.

SILK. The production of different species of the caterpillar, particularly the one called by the generic name of the bombyx mori, or silk-worm, by distinction, which is commonly used in Europe. The silk is found enclosed in two small bags, from which it is drawn in fine threads, to serve the insect as a covering while it lies in the chrysalis state. The balls of silk which the worm spins are called cocoons, which are sold to persons whose business it is to reel them off. A single cocoon is never reeled off separately, it being two weak for that purpose; but in the reeling, the ends of several cocoons are joined and reeled together out of warm water, into which they are put for the purpose of softening their natural gum, and making them stick.

SILK-THROWER, or SILK-THROWSTER. One who throws or spins silk so as to fit it for weaving.

SILK-WORM. A very useful insect, which produces silk, said to have been introduced into the Roman empire from China, in the reign of Justinian. The engraving represents the silk-worm in the caterpillar state, when it is of a whitish colour, with twelve feet, from which state it changes to a butterfly of the moth kind. The silk is formed by it while in the caterpillar state.



SILVAN. Pertaining to woods, as the silvan nymphs, &c.

SILVER. The whitest of all metals; considerably harder than gold, but not quite so ductile or malleable. It ignites before it melts, and requires a strong heat to fuse it; it is chiefly found in South America. It is soluble in nitric acid, or aqua-fortis.

SILVERING. The art of covering the surfaces of substances with a thin coating of silver. It is of particular use for culinary utensils, as it resists the corroding power of vinegar, &c.

SIMILAR (in Mathematics.) An epithet mostly applied to figures, angles, &c. which have the same disposition and conformation of the parts.

SIMOOM. A hot, suffocating wind, which prevails at certain seasons on the deserts of Arabia and Africa. It was observed by Bruce in the course of his travels to discover the sources of the Nile, and is supposed to be in some respect analogous to the sirocco. It is called by Mr. Bruce the simoom; and from its effects upon the lungs, we can entertain but little doubt that it consists chiefly of carbonic acid gas in a very dense state, and perhaps mixed with some other noxious exhalations.

SIMONY. The crime of trafficking in church preferments.

SIMPLE (in Medicine.) What is not mixed with any other thing, as opposed to a compound.

SIMPLE (in Pharmacy.) A general name for all herbs which have any particular medicinal virtue.

SIMULTANEOUSLY. At one and the same moment.

SINECURE. An office to which little or no personal service is attached.

SINE DIE, i. e. WITHOUT DAY. A term in law for a defendant who is dismissed court without trial. Also, used to express an adjournment, for an indefinite time, of any public body.

SINE OF AN ARC. A right line drawn from one end of an arc perpendicular to the radius drawn to the other end.

SINE QUA NON. What cannot be dispensed with.

SINEW. The ligament which joins two bones.

SINGULAR NUMBER (in Grammar.) A noun which denotes a single thing.

SINKING FUND. A portion of the public revenue set apart to be applied to the reduction or diminution of the national debt. This measure of appropriating a part of the revenue of the country for the discharge of the public debt was adopted in Holland in 1655, and in the Ecclesiastical States in 1685. But the particular fund so called in England was first adopted by Mr. Pitt.

SIR. A title of address to baronets and knights, coupled with their Christian name, as Sir William or Sir John, &c.; also, a general complimentary form of address.

SIREX (in Natural History.) The tailed wasp, a genus of insects of which there are 26 species.

SIRIUS, the DOGTSAR. A very bright star of the first magnitude in Canis Major, conspicuous in winter nights in the northern hemisphere, and from its splendour supposed to be the nearest of the stars.

SIROCCO. A periodical wind in Italy, which prevails about Easter.

SIZE. A sort of glue made of the shreds and parings of leather, parchment, or vellum, boiled in water, and strained. It is used by painters, papermakers, &c.

SIZER. A charity scholar at Cambridge college, England.

SKATE. An instrument made use of to travel swiftly upon the ice; a pleasant amusement for boys, but often very dangerous.

SKATE. A cartilaginous fish of the ray kind, called the variegated ray fish.

SKELETON. An assemblage of the bones of any animal, cleaned, dried, and preserved in their natural position.

SKETCH. The outline of any object, taken in pencil or otherwise.

SKIFF. A small light boat.

SKIN. One of the principal integuments of the body, consisting of three laminæ, namely, the scarf skin, which is the outermost; the rete mucosum, the second; and the cutis vera, or real skin, the third.

SKIRMISH. A loose desultory engagement between small parties detached from the armies.

SKULL. The bony part of the head, fashioned in the form of a globe, and consisting of three divisions, namely, the sinciput, or fore part; the occiput, or hind part; and the vertex, or crown.

SKY. The blue expanse of the heavens, or the region which surrounds the earth beyond the atmosphere. Sir Isaac Newton attributes the azure colour of the sky to vapours beginning to condense there, and acquiring a sufficient consistence to reflect the most reflexible rays.

SLAB (among Carpenters.) An outside plank cut from a tree, which is generally rough and uneven; also, a table of marble for hearths, &c.

SLATE. A bluish fossil stone, which is so soft that it can be cut into squares, and used either for the roofs of houses or other purposes.

SLEDGE. A carriage without wheels, used for carrying ploughs or other implements from place to place; also, a carriage in Rus-

sia, fitted for travelling on the snow. In Lapland, the sledges are drawn by reindeer.

SLEEPERS. Timbers lying next to the ground, or under the boarding of the floor.

SLEIGHT OF HAND, or SLIGHT OF HAND. The tricks of jugglers performed with such dexterity as to deceive the quickest eye.

SLIDING-RULE. A mathematical instrument, to be used without compasses in gauging.

SLING. A contrivance for throwing stones, consisting of a leathern strap and two strings.

SLING (in Surgery.) A bandage for supporting a wounded limb.

SLOOP. A small vessel with one mast. In the navy, sloops are tenders carrying ten or twelve guns, and about thirty men.

SLOTH. An animal remarkable for its slow motion in walking. It climbs quicker than it walks.

SLUG. A variety of the snail tribe, that has no shell. It is very destructive in gardens.

SLUG. A cylindrical or cubical piece of metal shot from a gun.

SLUICE. A frame of wood set in a river, &c. to raise the water or to let it pass off, as occasion may require.

SMACK. A small vessel used in the fishing trade.

SMALL ARMS. A general name for muskets, fusils, carabines, &c.

SMALL CRAFT. All manner of small sea vessels, as catches, hoys, &c.

SMALL-POX. A cutaneous disorder, to which persons are mostly subject once in their lives. If taken by infection, it is often dangerous, but if taken by inoculation, it mostly passes off without any ill consequence. Vaccination, or inoculation with the cow-pox, is milder, and is considered by many physicians o be a certain remedy against infection from the small-pox. Till the discovery of this substitute, the small-pox was the scourge of the human race.

SMALT. A sort of blue colour used in painting.

SMELL, or SMELLING. One of the five senses, performed by a vascular porous membrane which lines the internal cavity of the nostrils.

SMELT. A fish of the salmon tribe, which ascends rivers in vast shoals in the spawning season.

SMELTING (in Metallurgy.) The fusion or melting of ores, in order to separate the metallic from the earthy or stony parts. The art of fusing ores after washing is one of the most important operations in metallurgy.

SMITH. One who works in iron.

SMITHERY. The art of working iron into particular shapes, as occasion requires.

SMOKE. A humid matter, exhaled in the form of a vapour, which ascends from the fire. It is the rarefied, but undecomposed part of a combustible, always proportioned in quantity to the incombustible matter within a substance, or to the matter with which oxygen does not readily combine.

SMOKE-JACK. See JACK.

SMUGGLERS (in Law.) Those who get prohibited goods clandestinely and fraudulently imported, or who import or export dutiable goods without paying the duties imposed by law.

SMUT. A disease in corn, which consumes the germ and substance of the grain. It is a sort of fungus.

SNAIL. A sort of testaceous animal, of which there are numerous species, some of which are without shells, and called slugs, as black, white, &c.; and sometimes provided with shells of carbonate of lime, combined with coagulated albumen, secreted by the skin of the insect, the mouth of the shell being extended by layers of the substance to the margin. The eyes of snails are in their horns, which they draw in at pleasure.

SNAKE. An amphibious animal, which resembles an eel in its cylindrical body.

SNEEZING. A convulsive contraction of the chest.

SNIPE. A heath bird, nearly allied to the woodcock. In the summer it is seen in our marshes and low grounds, where it finds its food, which consists chiefly of worms and the

larva of insects. Its flesh is considered one of the first of the feathered dainties.

SNOW. A substance well known in cold climates, formed by the freezing of the vapours in the atmosphere. It differs from hail and hoar-frost, in being as it were crystalized, which they are not. This appears on examining a flake of snow by a magnifying glass, when the whole of it will appear to be composed of fine shining spicula, diverging like rays from a centre. As the flakes fall down through the atmosphere, they are continually joined by more of these radiated spicula, and thus increase in bulk like the drops of rain, or hail-stones.

SNOW-BIRD. A small bird which appears only in the time of snow; called also the snow bunting.

SNOW-DROP. A native perennial plant, growing in orchards, meadows, and the sides of hedges.

SNUFF. A narcotic powder prepared from the leaves of the tobacco plant. It serves to excite those nerves which are in contact with the brain.

SOAP. A composition of oil or fat, and potashes, or any other alkali. The soft soap is made of potash and oil or tallow; the Spanish or Castile soap, of oil of olives, and soda or barilla: black soap is a composition of train oil and an alkali.

SOCIETY. A name given to any association of persons uniting together, and co-operating to effect some particular object, as the societies or academies for promoting the cause of literature; charitable societies, for purposes of public charity; missionary societies, for sending missionaries abroad, and the like.

SOCIETY ISLANDER. A native of the Society Islands, which are situate south of the equator in the Pacific Ocean. The inhabitants generally profess the Christian religion, and are the first example of a nation converted to Christianity by the efforts of missionaries in modern times.

SODA. A mineral alkali, sometimes found in a native state, as in the lakes in Egypt, which, being dried by the heat of the sun, leave beds of soda, or natron, as it is there called. Soda is, however, for the most part, procured from a plant, botanically called the salsola soda, which grows among the cliffs on the coast, and also from other plants on the sea-shore; but, in this case, it is more or less pure, according to the nature of the plant from which it is procured. Soda resembles potash very much, but it is rather more fusible, and when it comes into the air, it crumbles into powder instead of liquefying, as potash does.

SODA WATER. Water impregnated with carbonic acid gas.

SOI-DISANT. Self-styled.

SOIL. The ground in a state for cultivation, or for the growth of plants.

SOLAR SYSTEM. That system of astronomy, which is founded on the hypothesis that the sun is the immoveable centre of the universe, round which all the other planets revolve at different distances, and in different spaces of time.

SOLDER. A metallic composition used by plumbers and other artificers, for the purpose of uniting metallic bodies more firmly together. Iron is generally soldered with copper; copper and brass, with tin.

SOLE. A fish, probably so called from keeping on or near the bottom of the sea; they

abound on the British coast, and weigh about seven pounds.

SOLECISM. An impropriety of speech contrary to the rules of grammar.

SOLICITOR. A person who is employed in conducting suits in chancery.

SOLID (in Geometry.) A magnitude which has length, breadth, and thickness.

SOLID (in Physics.) A body whose minute parts are so connected together as not to yield readily to the impression of external force, in distinction from a fluid.

SOLIDITY. That property of matter by which it excludes every other body from the place which it occupies.

SOLITARY CONFINEMENT. The confinement of prisoners by themselves in cells.

SOLO (in Music Books.) A name for any part that is performed by one single person.

SOLSTICE. The time when the sun is at the greatest distance from the equator, namely, 23° 28′, which happens about the 21st of June, when he enters the tropic of Cancer, or the summer solstice; and about the 21st of December, when he enters the tropic of Capricorn, which is the winter solstice.

SOLSTITIAL POINTS. The two points in the ecliptic, namely, the first of Cancer, and the first of Capricorn, when the solstices happen.

SOLVENT. Any menstruum or corrosive liquor which will dissolve bodies.

SOLUTION. The intimate mixture or perfect union of solid bodies with fluids, so as seemingly to form one homogeneous liquor.

SOMNAMBULISM. Walking in one's sleep.

SOOT. A volatile matter arising from the smoke of wood or other fuel; or, more properly, the smoke itself dried and condensed on the sides of the chimney.

SOPHISM. A specious but false argument, that serves to mislead.

SOUND. That effect or impression on the ear supposed to be occasioned by the tremulous motion of the air acting on that organ. If this motion be uniform, then it produces a musical note or sound. It travels at the rate of 1142 feet in a second, and different vibrations affect the different gases which constitute the atmosphere, and, hence their various simultaneous tones; but the same gas may be variously affected, and hence different pitches of tone, or octaves. If a string perform 100 vibrations in a second, the ear receives 100 strokes, which we call sound; and, if another makes 200 vibrations, the first is lower or flatter, and the latter higher and sharper, but according every other time, so that in flat sounds there are fewer vibrations than in sharp sounds. Every key of the piano-forte contains a determinate number of vibrations, which accord at regular intervals, and are completed in a second. It appears by experiment, that we cannot determine the sound of a string which makes less than 30 vibrations in a second, because it is too low, nor of one which makes more than 7552 vibrations in a second, because too high. These limits determine the power of the human ear. The eight notes of an octave are in length as follows:—128-144-160-180-192-216-240-256—and these are the proportions of strings which sound the diatonic scale, in which, at certain intervals of 2, 3, and 5, the vibrations correspond.

SOUND (in Geography.) Any great inlet of the sea between the mainland and an island, as Long Island Sound, &c.

SOUNDBOARD (in an Organ.) A reservoir into which the wind is conducted, and thence distributed to the pipes.

SOUNDING (in Navigation.) Trying the depth of the water, and the quality of the bottom, by a line with a plummet at the end.

SOUP. A strong decoction of flesh or other substances.

SOW (in the Iron Works.) A block or lump of metal worked at once in the furnace.

SPA. A mineral spring.

SPACE (in Geometry.) The area of any figure.

SPACE (among Printers.) A slip of wood or metal for making a space between words or lines.

SPAN. An English measure of nine inches.

SPANIARD. A native of Spain, a hot, dry, and mountainous country of Europe. The soil

of the southern part of Spain is generally fertile. The inhabitants are haughty, bigoted, and jealous, but brave and generous; their favourite amusement is bull-fighting, and most of the towns have an amphitheatre erected for the purpose. Cadiz, the capital, contains 175,000 inhabitants.

SPANIEL. A valuable species of dog, with a long shaggy coat and pendulous ears. It is a native of Spain.

SPAR. Any sort of earth which breaks easily into cubical or laminated fragments with polished surfaces.

SPARROW. A bird so nearly allied to the finch, that they are classed by Linnæus under the generic name of fringilla. But the sparrow differs in its habits essentially from the finch. It is a mischievous, cunning, spiteful bird, that is very destructive in corn-fields, and in the roofs of houses, where it builds.

SPARROW-HAWK. A species of short-winged hawk, which lives upon smaller birds. In a domesticated state they are said to become very much attached to their keeper.

SPASM. An involuntary contraction of the muscular fibres.

SPATHACEÆ. One of the Linnæan natural orders, comprehending plants very similar to the liliaceous plants, as the narcissus, &c.

SPATULA. An instrument for spreading salves or plasters.

SPAVIN. A disease in the feet of horses, which causes them to swell.

SPEAKER OF THE HOUSE OF COMMONS. A member chosen by the house, and approved by the king of England, who regulates all their proceedings, and speaks in the name of the whole on all public occasions.

SPEAKING-TRUMPET. A sort of trumpet used at sea, by the help of which persons may hear at a great distance.

SPEAR. A sort of lance with a sharp point.

SPECIAL JURY (in Law.) A jury sworn to try a particular cause.

SPECIALTY (in Law.) A bond, bill, or similar instrument.

SPECIE. Gold or coin, in distinction from paper money.

SPECIES. Any particular plant, animal, or mineral, contained under a genus.

SPECIFIC. A medicine having a particular efficacy.

SPECIFIC GRAVITY. The relative proportion of the weight of bodies of the same bulk, which is determined by immersing them in any fluid. Hence, platina is 19.5; gold 19.25; silver 10.741; lead 11.35; copper 7.78; iron 7.78; paving Portland stone 2.5; glass 2.8; white marble 2.8; milk 1.03; olive oil 0.915; ether 0.739; fat 0.923; ash wood 0.845; beech 0.852; cork 0.24; elm 0.761; fir 0.55; oak 1.27; walnut 0.662. Taking atmospheric air as 1, then chlorine is 2.47; carbonic acid 1.52; oxygen 1.1036; azote 0.9691; steam of water 0.6235; carburetted hydrogen 0.555; and hydrogen 0.0735.

SPECTRUM. A luminous spot formed by a ray of light on a white surface when admitted through a small hole. If a dense transparent body be interposed, the light will be refracted in proportion to the density of the medium; but if a triangular glass prism be interposed, the light is not merely refracted, but divided into seven different rays. The ray of light no longer forms a luminous spot, but has assumed an oblong shape, terminating in semicircular arches, and exhibiting seven different colours. This image is called the spectrum, and, from being produced by the prism, the prismatic spectrum. These different coloured rays appearing in different places of the spectrum, show that their refractive power is different. Those which are nearest the middles are the least refracted, and those which are the most distant, the greatest. The order of the seven rays of the spectrum is the following: red, orange, yellow, green, blue, indigo, violet. The red, which is at one end of the spectrum is the least, and the violet, which is at the other end, is the most refracted. Sir Isaac Newton found, if the whole spectrum was divided into 360 parts, the number of the parts occupied by each of the colours to be the following; red, 45 parts; orange, 27; yellow, 48; green, 60; blue, 60; indigo, 40; and

violet, 80. These different coloured rays are not subject to farther division. No change is effected upon any of them by being farther refracted or reflected; and as they differ in refrangibility, so also do they differ in the power if inflection and reflection. The violet rays are found to be the most reflexible and inflexible, and the red the least.

SPECULUM. Any polished body impervious to the rays of light, such as polished metals, looking-glasses, &c.

SPERMACETI. An oily substance found in the head of the physeter macrocephalus, a species of whale.

SPHERE (in Geometry.) A solid contained under one uniform round surface, such as would be formed by the revolution of a circle about a diameter thereof, as an axis.

SPHERE (in Astronomy.) The concave orb or expanse which invests our globe, and in which the heavenly bodies appear to be fixed, at an equal distance from the eye.

SPHERICS. The doctrine of the sphere, particularly of the several circles described on its surface, with the method of projecting the same on a plane.

SPHEROID. A solid body approaching to the figure of a sphere. There are two species of spheroids, the oblate and the oblong both of which are understood to be formed from the circular motion of a semi-ellipsis round its axis. The oblate spheroid is shaped like an orange, and the oblong like a lemon.

SPHINX. A fabulous monster of Thebes, said to have put forth riddles, and to have killed those who could not expound them; also, an Egyptian statue with the head of a woman and the body of a lion. The engraving represents the enormous one in Egypt, near the pyramids, the body of which is covered with sand.

SPIDER. An insect which is remarkable for its ingenuity in the formation of beautiful geometrical webs. These it constructs by threads, passing from four paps at the extremity of the abdomen, and each pap is perforated by a thousand small holes, through which the finest threads pass, which are spun into one by the pap, and the four are then united into the thread of the web, each thread being a union of 4000. The means which it adopts in choosing positions, and to fix the points of its web, entitle it to respect and admiration.

SPIDER-WORT. A perennial and a flowering plant, cultivated in gardens.

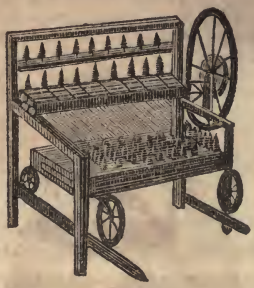
SPINAGE. A pot-herb.

SPINE (in Anatomy.) The bony column, which consists of the twenty-four vertebræ of the back.

SPINET. A musical instrument something similar to a harpsichord.

SPINNING. The act of drawing silk, flax, or wool, into threads, which is performed either by means of a wheel, or by machines particularly constructed for the purpose.

SPINNING-JENNY. A machine used to spin cotton, &c., by which many spindles are turned by a horizontal wheel.



SPINSTER (in Law.) An addition usually given to unmarried women.

SPIRACULA. Holes or pores in the abdomen of insects, through which they breathe.

SPIRAL. A curve line, which in its progress always recedes more and more from its centre.

SPIRE. A steeple that rises tapering by degrees, and ends in a point.

SPIRITS. A general name for all volatile substances collected by distillation, now confined by chymists to alcohol.

SPLEEN (in Anatomy.) A spongy viscus, of a livid colour, lying on the left side of the body.

SPLICING. Joining one rope to another.

SPOKES. The bars in the wheel of a carriage.

SPONDEE. A foot of two syllables.

SPONGE. A substance which, at one time, was supposed to be a sea-moss growing on rocks, but now discovered to be a sort of zoophyte, that is torpid, and clothed with a gelatinous porous flesh, by which it absorbs or rejects water at pleasure.

SPOONBILL. A bird so called from its flat orbicular beak, which is in the shape of a spoon. It inhabits the shores of America, from Brazil to Georgia. Its length is two feet six inches, and its colour a beautiful rose tint.

SPONTANEOUS. An epithet for things that act of themselves, without any apparent external agency, as the spontaneous combustion of vegetable substances, which when highly dried, and closely heaped, will burst into a flame; so the spontaneous generation of the limbs or parts of animals which have been cut off or destroyed.

SPOTS ON THE SUN, &c. Dark places observed on the sun, moon, and planets, of the the nature of which little is known at present.

SPRAT. A fish very similar to a herring, but smaller. It is a species of the same genus; under the generic name of clupea.

SPRAY. The sprinkling of the sea driven from the top of a wave in stormy weather.

SPRING (in Astronomy.) One of the seasons, commencing in the northern hemisphere when the sun enters Aries, about the 21st of March.

SPRING. A fountain or source of water rising out of the ground.

SPRING (among Mechanics.) A piece of tempered steel, fitted to give an elastic power to any machine, as the spring of a watch, represented underneath.

SPRING-TIDES. Tides at new and full moon.

SPRIT. A small boom or pole crossing the sail of a boat diagonally.

SPRUCE. A fluid extracted by decoction from the spruce fir.

SPRUCE-BEER. A cheap and wholesome liquor, made of treacle or molasses, and the essence of spruce, well boiled in water, to which yest is afterwards added to assist the fermentation.

SPUNK. A substance growing on the sides of trees, which, when dried, serves as tinder.

SPUR. A piece of metal made to fit the heel of a horseman, and armed with a rowel, which is used for urging a horse on.

SPY. A person hired to watch the motions of another, particularly what passes in an enemy's camp.

SQUADRON (in the Navy.) A detachment of ships employed in any expedition.

SQUADRON (in the Army.) A body of horse, from one to two hundred.

SQUARE (in Geometry.) A quadrilateral figure, whose angles are right angles, and sides equal.

SQUARE (in Arithmetic.) The product of any number multiplied by itself; also, the squares of lineal measures, as a square foot, a square yard.

SQUARE (among Carpenters.) An instrument for squaring their work or reducing it to a square.

SQUARE (in Military Affairs.) A body of soldiers formed into a square.

SQUARE-ROOT. A number which, multiplied in itself, produces the square number: thus, 2 is the square-root of 4.

SQUIRREL. An agile animal, that climbs dexterously, and leaps nimbly from tree to tree. It lives mostly on seeds and fruit. The gray squirrel is remarkable for its beauty and activity; it is generally of a fine bluish gray; easily tamed, and is very playful and mischievous. It is very common in the United States.

STACK or RICK. A structure of hay or corn, so formed that it may be thatched, by way of defence from the wet. The stem or

body of the stack should be about two thirds, and the roof one third, of the whole stack. A funnel or chimney, called the well, is frequently left in circular stacks, to prevent their heating too strongly. As a preservative against the wet, while the hay or corn is stacking, rick-cloths are fixed up.

STADIUM. A Greek long measure, equal to a furlong; also, the race-course among the Greeks.

STAFF. An ensign of office.

STAFF (in the Army.) A specified number of officers acting together.

STAFF (among Mariners.) A light pole erected in a ship, on which the colours are hoisted.

STAFF-OFFICERS. Those officers who constitute the staff.

STAG. An elegant animal of the deer kind, the male of which has branching and recurvate horns. He has a round, well formed body, with long and slender legs, and the head crowned with a pair of horns, which are as ornamental as they are useful. The eyes of the stag are peculiarly brilliant, and his sense of smelling is very acute. He is generally about three and a half feet high, and from four to six in length. His colour is reddish, and sometimes a brown or yellow. The stag is common in India, China, Scotland, and England.

STAG-BEETLE. An insect which lives in the decayed trunks of trees.

STAGE. The elevated place in the area of a theatre, where the actors perform their parts; also, any elevated place for the purpose of exhibiting any thing, or of carrying on any work in building.

STAGE-COACH. A public vehicle, so called because the horses go only a certain distance at a time, which is called a stage.

STALACTITES. A sort of calcareous earths, consisting of carbonate of lime, carbonic acid, and water. They are found suspended from the roofs of caverns in calcareous mountains, and are formed by the dripping of water.

STALK, CAULIS (in Botany.) That part of a plant which receives the nourishment from the root, and distributes it to the other parts.

STALL. A particular seat in a cathedral; also, a partition in a stable; and an open shop in a market or fair.

STAMEN (in Botany.) One of the principal parts of fructification in plants, on which Linnæus' sexual system is founded.

STAMINA. The simple original parts of an animal body, which existed in the embryo.

STAMP. Any instrument with which an impression is made.

STANDARD. An original weight or measure by which other measures are regulated.

STANDARD (in Military Affairs.) A flag or banner borne as a signal for the forming of troops into a body.

STANNERIES. Tin mines or works.

STAR. A general name for the heavenly bodies, but more particularly for what are otherwise denominated fixed stars, as distinguished from planets, comets, satellites, &c. These stars are stationed in space at twenty or thirty billions of miles distance from each other. The number visible to the naked eye, above the horizon at one time, is about 1000; but powerful telescopes augment their number indeterminately. Herschel was enabled to count hundreds in the field of his telescope, and the milky way is an assemblage of an almost infinite number of stars, indistinct to the naked eye. Herschel counted ten thousand in a square degree. It appears that space is filled with similar clusters or wonderful shoals of stars, which, to the unassisted eye, appear as luminous points, but viewed through telescopes display innumerable stars at such distances that their light must have been hundreds of years travelling to the earth. Of these clusters, called Nebulæ, Herschel has given a catalogue of many hundreds in all varieties of forms. He found, also, luminous spaces in which he could distinguish no stars, which may, perhaps, be considered as a variety of nature different from the system of suns and planets; but speculations on such subjects are useless. The particular stars in each constellation have been moreover distinguished, by the moderns, by the letters of the Greek, and also according to their magnitude, from the first or largest to the sixth or the smallest that are visible to the naked eye.

STARBOARD. The right hand of a ship, when looking towards the head or fore part.

STARCH. A powder drawn from wheat flour, and used in stiffening linen.

STARLING. A bird about nine inches long, that is very docile, and may be easily taught to speak.

STATICS. That branch of the science of mechanics which teaches the properties

of bodies in respect to their weight, equilibrium, &c. when in a state of rest. See MECHANICS.

STATIONER. A dealer in paper, pens, and all writing utensils, &c.

STATUARY. A branch of sculpture; the art of carving images as representations of real persons or things.

STATUES. Figures of men or other objects formed, with the chisel, of marble or stone, &c., or carved in wood, and cast in plaster of paris or in different kinds of metals.

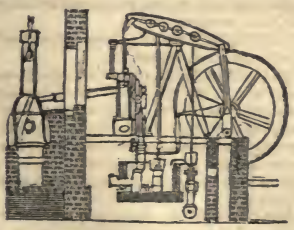
STATUTES. Laws, ordinances, and acts of a government.

STAVE (in Music.) The five horizontal and parallel lines on and between which the notes are placed.

STEALING (in Law.) The fraudulent taking away of another man's goods, against or without the will of him to whom they belong.

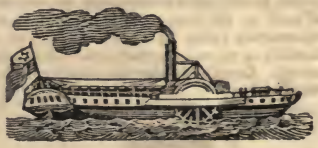
STEAM. The aqueous gas or vapour, created by heat applied to water; and at 212, the boiling point, every cubic inch of water produces rather more than a cubic foot of steam, and is then equivalent in elastic force to a column of mercury 30 inches high. It raises the mercury to 40 by adding 14 degrees more of heat, and every cubic foot expands to 5, and at 285 of heat it raises the mercury 95 inches; and every cubic foot of steam expands to 40, or 72,000 times the original bulk of water.

STEAM-ENGINE. An arrangement of mechanism, by which, by the alternate generation and condensation of steam, or by making it act above and below the forcer of the piston, a lever is raised and depressed with any de-



gree of power, from that of one horse to 300, every 19 cubic inches of water producing 20 feet of steam, which is equal in expansive force to the power of one horse, produced by less than a quarter of a pound of coals, with from 30 to 40 strokes per minute; and, in general, a chaldron of coals works 100 horse power four hours. Steam-engines are divided into low pressure and high pressure; in the latter, the steam being excited by the heat of 212, that of boiling water, is recondensed by cold, and a valve provides for its escape, when it raises the thermometer above thirty inches. But if the valve is loaded with a second 15 pounds, equal to another atmosphere, then the mercury will rise to 60, and the force be double, steam being 20 times its former bulk; if it be loaded with 28 pounds, it will be again doubled, and so on; but, of course, such augmentation of force tries the strength of the engine.

STEAM NAVIGATION. The application of the steam-engine to the propulsion of vessels through the water, by rotating paddle wheels at the sides. This application of steam was the invention of Robert Fulton, of New-York; it was brought into successful use in 1807, and is now adopted in most civilized countries, as a safe and perfect means of navigation, independent of wind, tide, and current; engines of 100 horse power, propelling vessels of 200 or 300 tons 10 to 18 miles an hour.



STEEL. Iron refined and purified by fire. It is chymically described as a carburet of iron, or iron combined with a small portion of carbon.

STEEL-YARDS. A balance for weighing things.

STEERAGE. An apartment in ships in front of the bulk-head of the great cabin.

STEERSMAN. The person at the helm employed to regulate the ship's course.

STELLATÆ. One of the Linnæan natural orders of plants, comprehending those which have their leaves disposed round the stem in the form of a star.

STEM (in Botany.) That part of a plant which sustains the root, leaves, and flower.

STEM (in Shipbuilding.) The circular piece of timber into which the two sides of the

ship are united at the fore end; the fore part of the ship, as opposed to the stern.

STENOGRAPHY, or SHORT-HAND. The art of writing in short characters, instead of words.

STEPPES. Barren tracts of land in Russia.

STEREOGRAPHY. The art of representing solids on a plane.

STEREOMETRY. The science which teaches the measuring of solids.

STEREOTYPE. One entire solid piece of type, cast from an impression in gypsum of a page composed with moveable types.

STERLING MONEY. The lawful money of Great Britain.

STERN. The hindermost part of a ship.

STEWARD (in Law.) A term applied to several officers of distinction. In England, the Lord High Steward presides at the trial of a peer, the coronation of the king, &c.

STEWARD (in Commerce.) One who manages the affairs of another, particularly in the management of estates.

STIGMA (in Botany.) The top of the pistil.

STILL. An apparatus for vapourizing compound fluids, and recondensing the vapours of each of the component parts as they are successively raised by heat; it consists of an alembic, a worm, a refrigerator, and a receiver. Oceans of poison have been manufactured in them.

STILTS. A set of piles driven into the ground plot for the intended pier of a bridge.

STIMULANTS. Medicines which tend to excite the animal energy.

STING. A weapon in the form of a barbed spear, with which some insects are armed.

STIRRUP. The step of a saddle.

STIRRUP (in Shipbuilding.) A piece of timber put under the keel when some part of it is lost; also, the name of some short ropes.

STIVER. A Dutch coin, equal to about one and three quarter cents.

STOAT. A species of weasel; a variety of the ermine.

STOCK. The wooden part of many instruments, as the stock of an anchor, the stock of a gun, &c.

STOCK (in the Army.) Part of a soldier's dress worn round the neck instead of a neck-cloth.

STOCK (in Commerce.) Any fund consisting of money or goods employed by a person in trade, particularly the sum of money raised by a company for carrying on any trading concern.

STOCK-BROKER. One who deals in the public funds for others.

STOCK-EXCHANGE. The place where stock is bought and sold.

STOCK-JOBBER. A speculator or dealer in the public stocks or funds.

STOCKING. A covering for the legs, made either of silk, wool, cotton, or thread, &c. knit with the hands or wove in a frame.

STOCKS (in Domestic Policy.) The public funds or government securities, which bear an interest, and are regularly bought and sold.

STOCKS (in Law.) A mode of confining the legs of disorderly persons by way of punishment, which was ordained by statute.

STOCKS (in Shipbuilding.) A frame of timber upon which vessels are built.

STOICS. A sect of philosophers among the ancients, who maintained that pain was no evil, and many other paradoxes of a similar nature.

STOLE, GROOM OF THE. The head officer in the bedchamber of a king or prince.

STOMACH. The membraneous, oblong receptacle in the lower region, destined to receive the food and convert it into chyle.

STONE. A hard mineral, that may be used in various ways in building. The principal component parts of stones are silica, alumina, zircona, glucina, lime, and magnesia; sometimes the oxides of iron, manganese, nickel, chronium, and copper, are also found to enter into their composition.

STONE-FRUIT. Fruit having its seed enclosed in a stony substance.

STONEHENGE. A pile of huge stones on Salisbury Plain, England, six miles distant from that city, which is generally admitted by antiquaries to have been a British temple. It consists of the remains of four ranks of rough stones ranged one within another, and sustaining others that are laid across and fastened by mortices.

STONEWARE. A general name for every thing which is manufactured of earth or clay, particularly the coarser sorts of earthenware.

STOP (in Music.) The pressure of the strings by performers on the violin and violoncello, by which they are brought into contact with the finger-board.

STOP OF AN ORGAN. A collection of pipes similar in tone and quality, which run

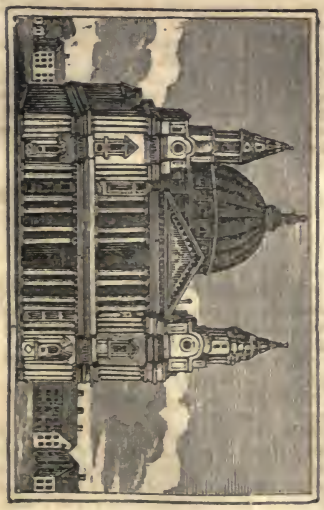
through the whole or a great part of the compass of an instrument.

STORAX. The gum benzoin.

STORES, or NAVAL STORES. The materials laid up in store for the use of a navy, such as ordnance, ammunition, masts, sails, cordage, &c.

STORK. A bird nearly allied to the heron and the crane, with which it is classed by Linnæus, under the generic name of ardea. It is a white bird, having the orbits of the eye naked. This bird is a native of Europe, Asia, and Africa, and feeds upon amphibious animals. In Holland and Germany the storks are much favoured, and are to be seen on the tops of the houses, and even in the public streets.

ST. PAUL'S CATHEDRAL. The metropolitan church of London, built by Wren, between 1670 and 1720, at a cost of upwards of 3,500,000 dollars. The cross is 340 feet high, the length of the building 500 feet, and its circumference 2292 feet.



STRAIT, or STRAITS. A narrow arm of the sea shut in by land on both sides, as the Straits of Gibraltar, &c.

STRATUM. A bed or layer, and STRATA, the beds or layers of different earths or mineral substances, of which the whole earth is composed.

STREAMER. A flag or pendant in a ship.

STRIKE. A measure of capacity, containing four bushels.

STRIPED BASS. A fish found in our salt-water rivers, shaped like a trout, but with a larger head; its sides are striped. They sometimes grow to the weight of 25 or 100 pounds.

STRUMA. A scrofulous swelling.

STUCCO. A composition of white marble pulverized and mixed with plaster of lime. It is used on walls, or in making ornamental figures.

STUD. A stock of breeding horses and mares, particularly those of the finer sort.

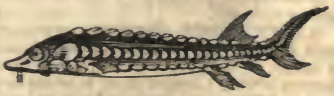
STUDDING SAILS. Light sails extended beyond the skirts of the principal sails.

STUDENT. One studying for his degrees at a university; also, a person who is preparing himself for the bar.

STUFF. Any sort of thin cloth made of wool or other matter.

STUM. Wine revived by a new fermentation.

STURGEON. A large kind of fish, which inhabits the sea, but ascends the rivers annually. The flesh of all the species is used for food.



STYLE. A sort of bodkin with which the ancients wrote on wax or on lead, now used for writing on ivory, leaves, and paper particularly prepared for the purpose.

STYLE (in Dialling.) The pin which, by its shadow, points out the hour.

STYLE (in Botany.) The columnar of the pistil.

STYLE. A name which, in several sciences, denotes a particular rule or method, as in rhetoric and grammar, the manner of expressing one's sentiments.

STYLE (in Chronology.) The manner of computing time, which is either old style or new style. By the old style the year consisted of 365 days and 6 hours; but the new or Gregorian style was made to correspond more nearly with the period of the sun's revolution, reckoning the year to be 365 days 5 hours 49 minutes 20 seconds, by retrenching 11 days from the old style. The new style was introduced into Germany in 1700, and in 1752 into England by act of parliament, whereby the 2d of September in that year was reckoned the 14th.

STYLE (in Architecture.) A particular mode of erecting buildings, as the Gothic style, Saxon style, &c.

STYPTICS. Substances which have a binding quality, and are used to stop bleeding, &c.

SUB. A prefix which denotes inferiority of rank or defect of quality, as subaltern, subordinate, &c.

SUBALTERN. An inferior officer, acting under the immediate direction of another, as cornets, ensigns, &c.

SUBDIVISION. A division or part under another or greater division.

SUBJUNCTIVE MOOD. A mood of verbs which imply a condition annexed to an affirmation.

SUBLIMATE. Any substance procured by the process of sublimation, particularly the sublimate of mercury, an extremely acrid and violently poisonous preparation.

SUBLIMATION. A process by which volatile substances are raised by heat, and again condensed in the solid form.

SUBMARINE. An epithet for what is or happens under the sea or water, as a submarine explosion or submarine navigation, &c.

SUBMULTIPLE. A number or quantity contained in another number or quantity a certain number of times exactly, as 4, which is the submultiple of 24.

SUBORNATION. A hiring or getting persons to swear falsely.

SUBPŒNA (in Law.) A writ for summoning witnesses.

SUBSCRIPTION. The signing or setting one's hand to a paper; also, the giving a sum of money, or engaging to give it, for the furtherance of some common object in which several are interested, as subscriptions in support of charitable institutions, and the like.

SUBSCRIPTION (among Booksellers.) The engaging to take a certain number of copies of any new work from the publisher.

SUBSCRIPTION TO THE THIRTY-NINE ARTICLES. The solemn testifying one's assent to the thirty-nine articles of the Church of England, by taking an oath and signing one's name thereto, as occasion requires.

SUBSIDIARY TROOPS. Troops hired to serve for a given sum.

SUBSIDY. Money given to a foreign power for services rendered.

SUBSTANTIVE. Another name for a noun.

SUBSTITUTE (in Law.) One delegated to act for another.

SUBSTITUTE (in the Militia.) One engaged to serve in the room of another.

SUBSTRATUM. A stratum underneath.

SUBTENSE OF AN ARC. A right line opposite to an angle, supposed to be drawn between the two extremities of the arc.

SUBTERRANEAN. Underground, or within the bowels of the earth.

SUBTRACTION. The taking of one number or quantity from another, expressed by this character —; as, 5—3=2.

SUBTRAHEND. The quantity to be subtracted.

SUCCEDANEUM. A medicine substituted for another.

SUCCINIC ACID. An acid drawn from amber.

SUCCOTRINE ALOES. A sort of aloes obtained from a species of the aloe, namely, the aloe perfoliata of Linnæus.

SUCCULENTÆ. One of the Linnæan natural orders of plants, including the juicy evergreens, as the mesymbrianthemum, &c.

SUCKER. The piston of a pump; also, a piece of leather laid wet upon a stone, which, owing to the pressure of the atmosphere, adheres very closely, and is not to be pulled off without great force.

SUCKER (in Botany.) A young twig shooting from the stock.

SUCKING FISH. A fish having a flat naked head and a naked body, which adheres very firmly to the bottom and sides of vessels. It was called by the ancients remora, and in the Linnæan system echineis remora.

SUFFERANCE. A term in law, applied to tenants. A tenant at sufferance is one that continues after his estate is ended, and wrongfully holdeth against another.

SUFFRAGAN. A bishop that is subordinate to an archbishop.

SUFFRAGE. A vote at an election in favour of a person.

SUGAR. A sweet substance procured from many plants or parts of plants, as from the sap of the maple, birch, &c.; the root of the carrot, beet, &c.; the leaf of the ash, the grain of wheat, &c.; but particularly from the su-

gar-cane in the West Indies, by boiling the expressed juice with quicklime or vegetable alkali.

SUGAR-BAKING. The process of refining the raw sugar after it comes from the sugar plantations in the colonies.

SUGAR-CANE. A plant growing in the West Indies, and in some of the southern sections of the United States, which consists of a knotted reed, that rises sometimes to the height of twenty feet.

SUGAR OF LEAD. Acetate of lead.

SUI GENERIS. Of its own nature or kind.

SUIT. An action at law.

SULPHATES. Salts formed by the union of sulphuric acid with different bases, as the sulphate of soda, called Glauber's salts; the sulphate of magnesia, called Epsom salts; so the sulphate of copper, the sulphate of zinc.

SULPHITES. Salts formed by the union of sulphurous acid with the different bases.

SULPHUR. A simple combustible substance, vulgarly called brimstone, which is found pure in great abundance. In combination with metals it forms the ores called pyrites. It is a nonconductor of electricity, and becomes electric negatively by friction. Its specific gravity is 1.990, &c.

SULPHUR, FLOWERS OF. A powder procured from sulphur when it is heated to the point of 170 degrees.

SULPHURETS. Compounds of sulphur with different alkaline earths and metallic bases, as the sulphuret of lime, of potash, &c.

SULPHURIC ACID. An acid containing sulphur (its basis) and oxygen. Concentrated sulphuric acid is called oil of vitriol.

SULPHUROUS ACID. An acid formed by the combination of sulphur with a less degree of oxygen than is requisite to form sulphuric acid.

SULTAN. The title of the emperor of the Turks.

SUMACH. A shrub which grows naturally in the United States, Syria, Palestine, Spain, and Portugal. From its leaves, when dried and ground at the mill, is procured a powder used in tanning and dyeing.

SUMMER. One of the four seasons of the year, beginning, in the northern hemisphere, when the sun enters Cancer, about the 21st of June.

SUMMER (in Architecture.) A main piece of timber that supports a building.

SUMMONS (in Law.) A citation by virtue of which any man is called to appear before a magistrate or judge.

SUN. The great luminary, supposed, according to the Copernican system, to be the immoveable centre of the universe, having all the planets revolving around him at different distances, and in different periods of time. He is marked thus ☉. He is 883,246 miles in diameter, or 1,384,472 times larger than the earth, revolving on its axis in 25 1-2 days, with its equator inclined 7° 30′ to the plane of the earth's orbit, its apparent diameter being 32′ 36″ when nearest, and 31′ when farthest off; the earth at the sun subtending an angle of only 8 3-4″. Spots of vast dimensions are often observed on its surface, surrounded by faint shadows; and other luminous spots, called feculæ, are often discovered, but their nature is unknown. The sun appears to have an atmosphere of its own. The notion that the sun is in a state of combustion has many difficulties; its vast mass, perhaps, serves for the habitation of organized and intellectual beings. The sun appears to be one of the shoal of stars called the milky way, and Dr. Herschel observed, that it moves through space with all its planets, like so many satellites, towards the constellation Hercules, with a motion of about 68,000 miles an hour. But even at this rate it would be 100,000 years in arriving among the stars of that constellation; so that, probably, the solar system itself is but part of a larger system.

SUNDAY. The sabbath or Lord's Day.

SUN-FLOWER. A plant, the yellow flower of which expands like the rays of the sun.

SUPER. A prefix signifying excess, as superabundant, superannuated, &c.

SUPERANNUATED. Past the fixed or stated time: soldiers are superannuated who are too old for active service; boys are superannuated when they are too old to be admitted into any institution.

SUPERCARGO. One who takes charge of a cargo or lading.

SUPERFICIES. A magnitude bounded by lines.

SUPERLATIVE. The highest degree of comparison expressed by adjectives.

SUPERNATURAL. Beyond or out of the course of nature.

SUPERNUMERARY. Above the fixed or stated number, as soldiers attached to a regiment which has already its complete number.

SUPERSCRIPTION. A writing on the outside of a paper or any other object.

SUPERSEDING (in the Army and Navy.) Taking the place of another by special appointment.

SUPPORTERS (in Heraldry.) Ornaments without the escutcheon, which, as in the annexed figure, seem to bear it up or support it.

SUPPORTERS (in Architecture.) Images which serve to bear up any part of a building in the place of a column.

SUPPRESSION. The stoppage of any fluid.

SUPPURATION. The gathering of pus or matter in a boil or wound.

SURCHARGE. Any extra charge made by assessors upon such as neglect to make due returns of the taxes to which they are liable.

SURCINGLE. The girdle with which clergymen bind their cassocks; also, a girth for horses.

SURD. A number or quantity that is incommensurable to unity, as the square root of 2 or the cube root of 10.

SURETY. One that gives security for another.

SURF. The swell of the sea breaking upon the shore.

SURGE. A large wave rising above the waters of the sea.

SURGEON. One who cures by manual operation or external applications.

SURGERY. The art of curing or alleviating diseases by local and external applications, or operations by means of the hand or of instruments.

SURRENDER. A deed or instrument testifying that the tenant yields up the estate to him that hath the immediate estate in remainder or reversion.

SURRENDER OF A BANKRUPT. The surrendering or giving up all his property into the hands of his creditors or their assignees.

SURROGATE. An officer in some of the United States, before whom the wills of deceased persons are proved, and by whom letters of administration are granted.

SURVEYING. The art of measuring the area or superficial contents of lands, grounds, fields, &c. by the help of proper instruments.

SURVEYOR. One who follows the art or business of surveying.

SURVEYOR (in Law.) One who surveys or superintends any business, as the surveyor of the highways, an officer who sees that they are kept in repair, &c.

SUSPENSION, or POINTS OF SUSPENSION. Those points in the axis or beam of a balance wherein the weights are applied or from which they are suspended.

SUTLER. A victualler that follows a camp.

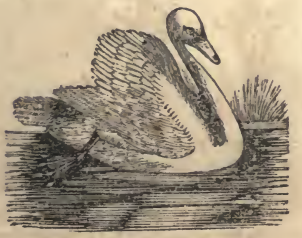
SUTTEE. The self-immolation of a widow on the funeral pile of her deceased husband. This horrid practice still prevails in many parts of India, but is prohibited in those that are under the immediate government of the English.

SUTURE. The union of bones by means of dentiform margins.

SWALLOW. A bird that builds its nest of plaster in the corners of houses, and flies so near the surface of the water that it catches insects as it flies. The swallow is the harbinger of spring.

SWAN. A noble bird, nearly allied to the

goose, with which it is classed by Linnæus, under the generic name of the anus. The swan is the largest of all web-footed waterfowl, some of them weighing about twenty pounds; the whole body is covered with a beautiful lily-white plumage. The elegance of form which this bird displays, when, with his arched neck and half-displayed wings, he sails along the crystal surface of a tranquil stream, which reflects, as he passes, the snowy beauty of his dress, is worthy of admiration. Young swans are called cygnets. In New Holland, a species of black swan, larger than the white kind, has been found. It is said these birds live to the age of one hundred and fifty years.



SWARD. The coat of grass on a meadow.

SWARTH. The row of grass as it falls from the scythe of the mower.

SWEDE. A native of Sweden, a cold, mountainous country in Europe, celebrated for its lakes and rivers. The Swedes are well informed, brave, and hospitable, and distinguished for their general education and morality. Stockholm, the capital, contains 75,000 inhabitants.

SWEEPS. Large oars used on board ships of war.

SWEEPSTAKES. The different stakes laid down by several persons, which all go to the winner.

SWEET PEA. An annual which bears a beautiful sweet-smelling flower.

SWIFT. A sort of lizard which moves very swiftly; also, a sort of bird.

SWIMMING. The act of sustaining the body in water, and moving in it as fishes and other animals do naturally, and as man also, by an acquired art, may do.

SWINE-STONE. A sort of calcareous earth.

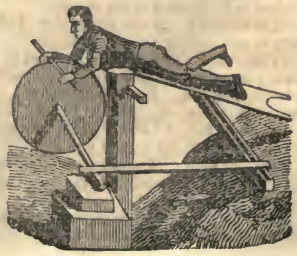
SWISS. A native of Switzerland, which is a small but romantic country lying upon the Alps, the scenery of which is picturesque and sublime. It is the highest portion of Europe, and enjoys almost every variety of climate. The inhabitants are industrious, brave, hardy, intelligent, and strongly attached to their country.

SWIVEL. A small piece of artillery, that may be turned on a pivot in any direction.

SWORD. A weapon of offence, worn at a soldier's side.

SWORD-BEARER. An officer who carries the sword of state before a magistrate.

SWORD-CUTLER. One who prepares swords for use. The engraving represents the position in which these artisans grind and finish these weapons.



SWORD-FISH. A fish furnished with a swordlike snout, with which it attacks other fish. It sometimes weighs above one hundred pounds, and is fifteen feet in length. The body is of a conical form, black on the back, white under the belly, a large mouth, and no teeth; the tail forked. It is a fish extremely rapacious, and finds in the above instrument a weapon of attack and destruction, able to procure it the most ample supplies. It first transfixes its prey with its snout, and then devours it. It is found in the Mediterranean, chiefly about Sicily, and is used for food by the Sicilians, who preserve it for a long time by salting it in small pieces.

SYCAMORE. A large tree like a fig tree, common in Lower Egypt, the stem of which is frequently 50 feet in circumference; it is of a rapid growth, and extreme longevity.

SYCOPHANT. An informer among the Athenians, who gave information of those that exported figs contrary to law; now taken for a cringing, sneaking flatterer.

SYLLABLE. An articulate sound formed by a vowel alone, or a vowel and consonant.

SYLLABUS. A list of the chief heads of a book.

SYLLOGISM. A logical argument consisting of three propositions, called the major and minor, which are the premises; and the question which, after it is drawn from the other two, is called the consequence or conclusion: thus, 'every animal has life; man has life: therefore man is an animal.'

SYMBOL. The emblem or representation of some moral quality by some animal or thing supposed to possess the same quality: as, a lion is the symbol of courage; two hands joined together, a symbol of union. These symbols were much used by the ancients in representing their deities, as the eagle, attributed to Jupiter, is the symbol of his power.

SYMMETRY. A due proportion of all the parts to one another and to the whole.

SYMPATHETIC INK. A kind of ink which, when written with, is invisible until it is held to the fire. It is made from the solution of lead, bismuth, gold, and green vitriol.

SYMPATHETIC POWDER. A powder prepared from green or blue vitriol.

SYMPHONY. A consonance or concert of several sounds agreeable to the ear, whether vocal or instrumental.

SYMPTOM. A sign or mark by which the nature of the disorder is discovered.

SYNALOEPHA. A contraction of two vowels into one.

SYNCHRONOUS. Happening a the same time.

SYNCOPE (in Medicine.) A fainting or swooning.

SYNCOPE (in Grammar.) Taking a letter out of a word.

SYNCOPE (in Rhetoric.) A concise form of speech.

SYNCOPE (in Music.) The division of a note.

SYNDIC. A magistrate in Germany.

SYNGENESIA (in Botany.) One of the Linnæan classes, containing plants, the stamina of which form a cylinder.

SYNOD. An assembly of the clergy.

SYNOD (in Astronomy.) A conjunction of heavenly bodies, or concourse of two planets in the same optical place of the heavens.

SYNODICAL MONTH. The period wherein the moon departing from the sun, returns to a conjunction with him again; this is twenty-nine days, twelve hours, forty-eight minutes, twenty-eight seconds.

SYNONYMES. Words of the same or similar signification, which serve to amplify a subject.

SYNOPSIS. A general view of a subject.

SYNOVIA. An unctuous fluid secreted within the capsular ligaments of the joints, which serves to lubricate them and facilitate their motion.

SYNTAX. That part of grammar which treats of concord and government.

SYNTHESIS (in Mathematics.) A method of composition, as opposed to analysis.

SYPHON, or SIPHON. A bent tube used in drawing off wine, liquors, and other fluids, out of a vessel.

SYRINGA. A flowering shrub planted in gardens.

SYRINGE. A small instrument, on the principle of a pump, which draws in fluids and expels them again at pleasure.

SYRUP. A thick composition, formed from the juices of herbs and fruits boiled with sugar.

SYSTEM. An assemblage or chain of principles, the several parts of which depend upon or are connected with each other. Systems vary in different sciences, according to the hypothesis on which they are founded, as in astronomy, the Copernican or Ptolemaic system; in botany, the system of Tournefort, Ray, Linnæus, &c.

SYSTEM (in Music.) An interval compounded or supposed to be compounded of several lesser intervals.

SYZIGY (in Astronomy.) The conjunction or opposition of any planet in regard to the sun.

T

T, the nineteenth letter of the alphabet, stands as an abbreviation among the Roman writers for Titus, Tiberius, &c.

TABBY. A rich kind of silk that has undergone the process of being tabbied.

TABBYING. The passing any silk or stuff through a calender, the rollers of which are variously engraven, so as to give the surface a wavy appearance.

TABLE (in Perspective.) The transparent or perspective plane.

TABLE (in Arithmetic.) Any series of numbers formed so as to expedite calculations, as the tables of weights and measures.

TABLE (in Astronomy.) Computations of the motions and other phenomena of the heavenly bodies.

TABRET. A small drum.

TACIT. Not expressed, as a tacit confession, one that may be inferred sometimes from a person's silence.

TACKING. Changing the course.

TACKLE or TACKLING. The general furniture of a ship, particularly the ropes and the assemblage of blocks by which heavy bodies are moved.

TACTICS. The science of disposing either an army or a fleet of ships, and regulating their movements for the more effectual attainment of the ends proposed.

TADPOLE. A frog in its unformed state.

TAFFETY. A fine sort of silk remarkably glossy.

TAILOR-BIRD. An ingenious small bird, which sews up leaves with fibres, so as to form its nest in the manner in which tailors make clothes with a needle and thread.

TALC. A soft kind of earth, soapy to the touch, and composed of magnesia, alumine, and silica.

TALENT. A money of account among the Jews and Greeks. The Jewish talent of silver was equal to about $1518\frac{1}{2}$, and that of the Greeks to $857. The Jewish talent of gold was equal to $20,308\frac{1}{2}$.

TALENT. A weight among the Jews, containing one hundred and eighty-nine pounds eight ounces fifteen pennyweights and seventeen grains. The talent among the Egyptians and Greeks did not weigh so much.

TALES (in Law.) Jurors added to make up the number wanted.

TALLOWCHANDLER. A maker and vender of tallow candles, as distinguished from a waxchandler.

TALLOW TREE. A tree in China which produces an unctuous juice, of which candles are made.

TALLY. A cleft piece of wood on which an account is scored.

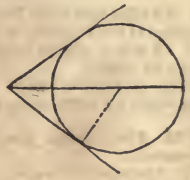
TALMUD. The book of the oral law of the Jews, containing their laws, customs, and traditions.

TAMARIND. A West Indian tree, producing a rich pulpy fruit, growing in a pod, which has an agreeable acidity combined with sweetness. It is much used in medicine.

TAMBOUR (in Fortification.) A kind of work formed of pallisades.

TAN. The bark of the oak or some other tree ground or chopped, and used in tanning leather.

TANGENT. A line touching a circle or other curve without cutting it.



TANNIN. The substance procured from tan, by macerating it in cold water; this has the property of forming with animal gelatine a tough insoluble matter, and is therefore used in converting skins into leather by the process of tanning. Oak-bark yields one sixteenth of its weight, but other barks only a thirtieth or fortieth. Four pounds of good oak bark make one pound of leather; but one pound of catechu, an earth brought from Bengal, is equal to 8 pounds of oak-bark.

TANNING. The process of preparing leather from the skins of animals, which, after being cleared of the hair, wool, and fleshy parts, by the help of lime, scraping, and other means, are macerated in an astringent liquor formed from the bark of the oak tree. This is usually done by putting into the tan pit layers of ground oak-bark and skins alternately, with the addition of a small quantity of water.

TANTALUS. The Ibis of Egypt, a bird as large as the goose or swan, which subsists on the frogs and insects left by the Nile.

TAPESTRY. Cloth woven in figures

TAPEWORM. A kind of worm resembling a tape in its form, which infests the in-

testines of the human body, and causes many disorders.

TAPIOCA. The starch of the cassava root.

TAPIR. The land hippopotamus; a quadruped of the order belluniæ.

TAR. A thick, black, unctuous substance, obtained from old pines and fir trees.

TARANTULA. The largest of all European spiders. It is a native of Italy, Cyprus, Barbary, and the East Indies. The bite of this poisonous spider produces inflammation, difficulty of breathing, and sickness.

TARE. An allowance to the buyer for the outside package in the weighing of goods.

TARES. A sort of vetches much used as spring fodder for cattle.

TARGET. A kind of shield anciently used by the Scotch; a mark set up to be fired at.

TARGUM. The Chaldee paraphrase of the Old Testament.

TARIFF. Custom-house and excise duties imposed on goods, with their respective rates, by which the manufactures of a country are protected from foreign competition.

TARPAULIN. A canvass cloth to keep off the rain.

TARTAN. A small coasting vessel in the Levant, having one mast and a bowsprit.

TARTAR. The concreted substance formed on the sides of wine casks.

TARTAR, Cream of. A powder compounded of tartaric acid and potash.

TARTARIC ACID. An acid procured by the solution, filtration, and crystallization of the tartar.

TARTARS. Natives of Tartary, a country which occupies a very large portion of the middle of Asia, from the Caspian Sea to the Pacific Ocean. It is divided into Chinese Tartary, subject to China; and Independent Tartary, many of whose tribes pay tribute to the emperor of Russia. The Tartars, with their flocks and herds, wander about in vast hordes or tribes, dwelling in tents, and living principally on the flesh of camels and sheep. Their chief employment consists in tending their flocks, hunting, and exercising with the bow and lance. They are ignorant and superstitious, but brave, and remarkable for their hospitality to strangers. Bukhara is the capital, and contains about 100,000 inhabitants.

TARTRATES. Salts formed by the combination of tartaric acid with different bases.

TATTOOING. Puncturing the skin and rubbing in a dye, which is practised among the natives of the South Sea Islands.

TASTE. One of the five senses, by which the savour or relish of any thing is perceived. This resides principally in the papillæ of the tongue and palate.

TAURUS. The second sign of the zodiac, marked thus ♉; it contains among other stars the two clusters called the Pleiades and Hyades.

TAUTOLOGY. Useless repetition.

TAXES. The assessments imposed by law for the public service, either direct and obnoxious, as on persons and necessaries, or indirect and voluntary, as on luxuries and raw materials.

TEA. The leaf of a Chinese tree, from which a refreshing beverage of the same name has been made ever since its first introduction into Europe in the sixteenth century, when it was sold at $14 per pound. The tea

plant is a native of China, Japan, and Tonquin, and has not been found growing spontaneously in any other part of the world. It affects valleys, the sloping sides of mountains, and the banks of rivers exposed to the southern rays of the sun. There are two principal sorts of tea, namely, the Green and the Bohea, or black; these are distinguished into different species, according to the nature of the leaf, as of the Greens, the Imperial, Hyson, and Singlo; of the Boheas, the Souchong, Cambo, Congo, Pekoe, and Common Bohea. In seven years the shrub rises six feet, and being cut down to the stem produces fresh sboots, each of which bears as many leaves as a whole shrub.

TEAK-TREE. The oak of the eastern world, and the only Indian wood impenetrable by the white ants. It is strong, light, and easily wrought at all ages, and is much used in building ships and houses.

TEARS (in Anatomy.) The limpid fluid secreted by the lachrymal glands, adjoining the eye, and increased by emotions of the mind.

TEARS (in Chymistry.) Any fluid falling in drops, as gums or resins exuding in the form of tears.

TECHNICAL. Pertaining to arts and sciences, as technical terms, terms of art.

TEETH. The hardest and smoothest bones of the body, fixed in the alveoli or sockets of the two jaws, which begin to appear about the seventh or eighth month after the birth, first the dentes incisuri or incisores, the four front teeth of the upper and lower jaw; then the canini, or eye teeth, one on each side the incisores in each jaw; and then the molares, or grinders, mostly ten in each jaw, making altogether thirty-two, although the number varies in different subjects. In the seventh year new teeth are formed, and in the twenty-first the two last of the molares mostly spring up, called the dentes sapientiæ.

TEGUMENTS (in Anatomy.) Coverings of the body, as the cuticle, rete mucosum, skin, and adipose membrane.

TEINT. An artificial colour.

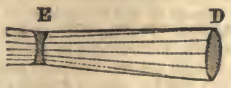
TELEGRAPH. A machine as represented

underneath, which serves to convey intelligence by means of motions employed as the signs of words, by which a notice has been given 500 miles in three minutes, though the usual time would be 10 or 12 days. That such a means of quick communication at a distance was early in use is clear from the scene in the Greek play, in which a watchman descends from a tower in Greece and gives the information that Troy was taken, adding 'I have been looking out these ten years to see when that would happen, and this night it is done.'

TELESCOPE. An optical instrument composed of lenses, so situated as to bring remote objects near to the view. It enables us so to dispose of the rays which proceed from distant objects, that we may see the image or spectrum formed in the focus of the object-glass, very near, or under an increased angle. The angle of the image is as the focal length, or the distance from the object-glass to the image, and the angle at the eye-glass is as its distance from the image; the magnifying power is, therefore, in the proportion of those angles. The glass nearest the object makes an image or picture by crossing and subsequently diverging rays, which a convex eye-glass of short focus renders parallel for vision; or which a concave eye-glass intercepts while converging, and the image then proceeds directly to the eye with parallel rays. In the figure annexed, the arrow is the object, the rays of which cross at the object-glass, and form an image which is viewed through a convex glass by the eye.

In the following figure O B is the object rays from which cross at G, in the object-glass A D, forming an image, which is viewed by E Y, the eye-glass, by the eye at H.

D object-glass, E concave eye-glass carrying parallel rays to the eye.



The first and second are the common telescope and microscope, the eye-glass being usually compounded of three eye-glasses to set the object erect; and the third is the Galilean, or primitive telescope, and also the opera-glass.

The following is a section of the tubes, with the position of the object and eye-glasses.

Telescopes are either refracting or reflecting; the former consist of different lenses through which the objects are seen by rays refracted by them to the eye, and the latter consist of specula from which the rays are reflected and passed to the eye. The lens or glass turned to the object is called the object-glass, and that next to the eye the eye-glass, and when the telescope consists of more than two lenses, all but that immediately next the object are called eye-glasses. Great improvements have been made in the construction of telescopes, both reflecting and refracting. That constructed under Dr. Herschel's direction is the largest instrument of the kind, and possesses the highest magnifying power of any that was ever made. The tube of this telescope is thirty-nine feet four inches, it measures four feet ten inches, and every part of it is of iron that is rolled, or sheet iron, joined together by a kind of seaming, like the iron funnel of a stove. In order to command every altitude, the point of support is moveable, and its motion is effected by the help of pulleys, so that it may be moved backward or forward and set to any altitude up to the very zenith. The tube is also made to rest with the point of support in a pivot, which permits it to be turned sidewise. A mounted telescope with rack-work for vertical and horizontal motions, is represented by the engraving.

To whom we are indebted for the discovery of the powers of this instrument is not precisely known. Wolfius infers from a passage in the 'Magia Naturalis' of John Baptista Porta, that he was the first who made a telescope, and this inference is the more probable, as Baptista Porta had particularly directed his attention to optical instruments; but no certain mention is made of any telescope before 1590, thirty years afterwards, when a telescope sixteen inches long was made and presented to Prince Maurice of Nassau, by a spectacle maker of Middleburg, whose name is not exactly known, being called Luppersheim, Jansen, and also Hansen. No advances were, however, made in the construction of telescopes before the time of Galileo, who while at Venice accidentally heard that a sort of optic glass was made in Holland, which brought distant objects nearer, and considering how this thing might be, he set to work and ground two pieces of glass into a form, as well as he could, and fitted them to the two ends of an organ pipe, with which he produced an effect that delighted and astonished all beholders. After exhibiting the wonders of this invention to the Venetians on the top of the tower of St. Mark, he devoted himself wholly to the improving and perfecting the telescope, in which he was so successful that it has been usual to give him the honour of being the inventor. An anecdote mentioned by F. Mabillon in his travels, of having met, in a monastery of his own order, with a manuscript copy of the works of Commestor, written by one Conradus in the thirteenth century, and containing a portrait of Ptolemy looking through a tube at the stars, would seem to justify the supposition that this contrivance of facilitating the view of distant objects was of earlier date than is generally considered; but we are not informed whether the tube was furnished with glasses, and very probably tubes were then used to defend and direct the sight, and render the object more distinct by singling it from all other objects in the vicinity. It must not, however, be denied, that the optical principles upon which the effect of telescopes is founded are as old as Euclid at least, and wanted nothing but accident or reflection to lead to this mode of applying them.

TELLER. An officer of a bank who receives and pays money on checks.

TELLERS. Those who receive the votes at elections.

TELLURIUM. A kind of metal of a blue white colour, soft, brittle, and easily reducible to powder. It melts in a heat something above the fusing point of lead.

TELLUS (in Heathen Mythology.) The goddess of the earth: the earth itself.

TEMPERAMENT (in Music.) The accommodation or adjustment of imperfect sounds.

TEMPERATURE. The constitution of the air according to the diversity of the seasons or the different situations of climate and other circumstances.

TEMPERING (in Iron Works.) Making iron and steel of a suitable degree of hardness or softness.

TEMPERING (among Brickmakers.) The duly mixing the materials of which bricks are made, that they may be more easily cut and reduced to the proper shape.

TEMPLARS, or Knights Templars. An ancient order of knighthood, which was abolished at the beginning of the fourteenth century.

TEMPLE. A place appropriated for the performance of public worship.

TEMPLE (in Anatomy.) The upper part on each side of the head, where the pulse is felt.

TEMPORAL (in Anatomy.) Pertaining to the temples, as the temporal arteries, &c.

TENACITY. The degree of force with which the particles of bodies cohere or are held together; a term applied particularly to metals which may be drawn into wire, as gold and silver.

TENAILLE. An outwork of a fortress.

TENANT (in Law.) One who holds lands by any right, particularly one who occupies lands or tenements at a yearly rent, for life, years, or at will.

TENCH. A fish with a golden body and transparent fins, that inhabits rivers and ponds.

TENDER (in the Navy.) A small vessel that attends a larger.

TENDER (in Law.) The offering of money in payment of a debt.

TENDON ACHILLES. That which connects the calf of the leg with the heel.

TENDONS. The extremities of the muscles.

TENDRIL. The curling part of plants, as in the vine, with which they lay hold of any thing for support.

TENEMENT (in Law.) Any thing which may be holden, particularly houses or any other buildings.

TENNIS. A game with a ball, driven by a racket.

TENNIS-COURT. The place where the game of tennis is played.

TENON. The projecting end of a piece of timber fitted to a mortise.

TENOR (in Music.) The tone above the base.

TENSE. That part of a verb which denotes time, as the present tense, denoting the time that now is; the preterite, or past, the time that was; and the future, the time that will be. Some tenses likewise denote the state of the action, as to its completeness or otherwise, in a certain degree or time, as the imperfect tense, which denotes an unfinished action at a certain time; the perfect, a finished action at any time; and the pluperfect, a finished action before a certain time.

TENSION. The act of stretching or being stretched, as the tension of the muscles when the body is in motion.

TENTER (in the Cloth Manufacture.) A railing constructed to stretch cloths upon.

TENTERHOOK. A particular hook on which things are hung that are to be stretched.

TENURE (in Law.) The conditions on which lands and tenements are held.

TERCE. A wine vessel containing forty-two gallons.

TERM (in Geometry.) The extremity or bound of a magnitude.

TERM (in Law.) A fixed and limited time within which courts of judicature are open.

TERM (in the Universities.) The fixed periods within which students are obliged to reside for the prosecution of their studies.

TERMES. The white ant, a genus of insects, inhabitants of the East Indies, Africa, and South America, which are said to exceed the common ant, the bee, and the beaver, in their skill, ingenuity, and good government. They build pyramidal structures ten or twelve feet high, that resemble villages in extent, and divide them off into several apartments, as magazines, chambers, galleries, &c. They are no less dexterous and remarkable in their manner of providing themselves with food, for they destroy food, furniture, books, and timber, with such rapidity, that a beam will be eaten by them to a mere shell in a few hours.

TERMINI. Figures used by the Romans for the support of entablatures, in the place of columns; the upper part consisted of the head and breast of a human body, and the lower of the inverted frustum of a cone. They were so called because they were principally used as boundary marks, and represented their god Terminus.

TERMS OF AN EQUATION. The members of which it is composed.

TERRACE. A platform or bank of earth raised and breasted, particularly in fortifications; also, a raised walk.

TERRA FIRMA. Mainland; the name particularly given to a country of South America, extending from the Atlantic to the Pacific Ocean to the extent of 1300 miles.

TERRA JAPONICA. Japan earth, the inspissated juice of a species of acacia.

TERRAPIN. A species of tortoise found in tide waters.

TERRESTRIAL GLOBE. An artificial representation of the earth's surface, by the help of which many problems in astronomy and geography are worked.

TERRIER. A hardy kind of dog, which is a great enemy to rats and other vermin. His scent is very acute.

Terriers are very useful to agriculturists,

especially for exterminating rats, pole-cats, and similar depredators. They are also remarkable for their vigilance, and are frequently employed as house dogs.

TEST (in English Law.) An oath prescribed by act of parliament for renouncing the pope's supremacy, &c.; also, the Sacramental Test, which was formerly required as the qualification of taking an office, but is now abolished.

TEST (in Chymistry.) A term applied to any substance which serves to detect the presence of a poisonous ingredient in a composition; also, a cupel or pot for separating base metals from gold or silver.

TESTACEA. Testaceous animals, or shell fish; the third order of animals under the class vermes, in the Linnæan system.

TEST ACT. An act of the English parliament, which required all persons to take the sacrament according to the rites of the church of England, on their acceptance of a public office. This act is so far repealed as relates to the sacramental test, for which a declaration is substituted, signifying that the party will do nothing to the injury of the established religion of England.

TESTAMENT (in Law.) The solemn act whereby a man declares his last will as to the disposal of his estate after his death.

TESTAMENT (in Theology.) Each of the volumes of the Holy Scriptures; that is, the Old and the New Testaments.

TESTATOR. A man who makes his will.

TESTATRIX. A female who makes her will.

TESTUDO. A machine among the ancients, which served to screen the soldiers when they approached the walls to mine.

TESTUDO (in Zoology.) A genus of animals, including the marine turtle, the river turtle, and the land tortoise. Land tortoises live to an astonishing age. The testudo mydas, or common green turtle, brought from the West Indies, is in the highest estimation as an article of food.

TETANUS. A spasmodic contraction of the muscles of the lower jaw; the locked jaw.

TETRADYNAMIA. One of the Linnæan classes of plants, including those plants the flowers of which have six stamens, four of them longer than the other two, as candytuft, wallflower, cabbage, &c.

TETRAGYNIA. An order of plants under several classes, in the Linnæan system, the flowers of which have four pistils.

TETRANDRIA. One of the Linnæan classes, comprehending plants the flowers of which have four stamens, as the scabious, holly, plantain, &c.

TETRAO, or PINNATED GROUSE. A genus of birds, comprehending several species, three of which are natives of the United States. These birds abound in the lower part of the state of New-Jersey, and on the bushy plains of Long-Island, state of New-York.

TETRARCH. A Roman governor of the fourth part of a province.

TEXT. The original part of an author's work, as distinguished from any note or commentary.

TEXT. A passage of scripture chosen as the subject of a sermon.

TEXT (in Printing or Writing.) A particular kind of handwriting or form of letters used by lawyers and others.

THANE. A baron among the Saxons.

THAUMATURGUS. A worker of miracles; a title given by the Roman Catholics to some of their saints.

THEATRE. A building constructed for dramatic exhibitions, with a stage for the performers, and pit, boxes, and galleries for the audience. Theatres contaminate the morals of the young.

THEOCRACY. A government whereof God himself is the king, as that of the Jews before they were governed by king Saul.

THEODOLITE. An instrument used in surveying, for taking angles, &c. This instrument is supported on three staffs, screwed

into bell metal joints that are moveable, having a limb, or a strong bell metal ring, upon which are three moveable indexes, a bell metal double sextant, within which is a spiral level, and over it a telescope, all suitably adjusted with screws.

THEOLOGY. The study of religion, or the science which instructs in the knowledge of God and divine things.

THEOREM. A position laid down as truth.

THEORY. A doctrine which confines itself to the speculative parts of a subject, without regard to its practical application or illustration.

THERAPEUTICS. The healing art.

THERMÆ. Hot baths.

THERMOMETER. An instrument for measuring the temperature of the air, as respects heat and cold, founded on the principle that the expansions of matter are proportional to the augmentations of the temperature. The invention of the thermometer has been ascribed to different authors: to Cornelius Drebbet of Alemaar, by his countrymen Boerhaave and Muschenbroeck; to Father Paul, by his biographer Fulgenzio; to Galileo, by Vincenzio Viviani; but Sanctorino assumes the invention to himself, and his claim is fully admitted by Malpighi and Borelli. The first form of this invention was the air thermometer, consisting of a glass tube connected at one end with a large glass ball, and at the other end immersed in an open vessel or terminating in a ball with a narrow bottom. The vessel was filled with a coloured liquor that would not easily freeze, as aquafortis tinged with a solution of vitriol or copperas. The ball at the top being then moderately warmed, the air contained in it was in part expelled, and then the liquor pressed by the external air entered at the lower ball and rose to a certain height in the tube, according to the temperature. The air being found not so fit for measuring with accuracy the variations of heat and cold according to this form of the thermometer, which was first adopted, alcohol, or spirit of wine, was used by the Florentine academy, enclosed in a very fine cylindrical glass tube, having a hollow ball at one end, and hermetically sealed at the other. To the tube is applied a scale, divided from the middle into one hundred parts, upwards and downwards. As spirit of wine is capable of a very considerable degree of rarefaction and condensation by heat and cold, when the heat of the atmosphere increases the spirit dilates, and consequently rises in the tube; and when the heat decreases the spirit descends. As inconveniences were found to attend each of these thermometers, as also that of M. Reaumur, which was constructed in a similar manner, Mr. Fahrenheit first employed mercury for this purpose, which has since been universally adopted. The method of constructing his thermometer, of which a representation is here given, is as follows: a small ball is blown at the end of a glass tube, of an uniform width throughout. The ball and part of the tube are then to be filled with quicksilver which has been previously boiled to expel the air, the open end of the tube then being hermetically sealed, a scale is constructed by taking the two fixed points, namely, 32° for the freezing point and 212° for the boiling point, and dividing the intermediate space into equal parts, or 180°.

THIRST. An uneasy sensation, which arises from a deficiency of saliva, for moistening the mouth, and lubricating the throat. Thirst is generally occasioned by the use of strong, salted, or highly seasoned food: a moderate degree contributes to the preservation of health, as it requires a certain proportion of drink to promote digestion; but, if it become excessive, it is in most cases a symptom of fevers, dropsies, &c. Thirst can be alleviated by bathing in sea-water.

THISTLE. A prickly weed that infests corn fields.

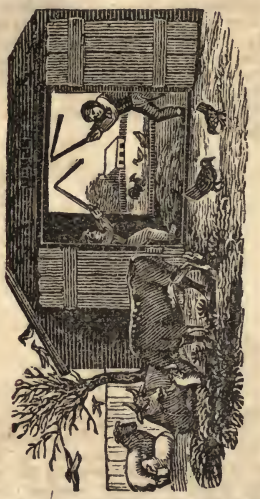
THORACIC. An order of fishes in the Linnæan system, which have the ventral fins placed directly under the thorax.

THORAX. The chest, situated between the neck and the abdomen.

THOROUGH BASE (in Music.) The accompaniment to an air played with the left hand, making perfect harmony with the part played with the right hand, and considered as the fundamental basis of the composition.

THRASHING. The act of beating ears of ripe wheat, rye, &c. so as to separate the grain, which, on being winnowed from the chaff, is ready for the miller. Thrashing is performed by different methods, in various parts of the globe: thus, in the eastern climates, corn is trodden out by oxen, cows, horses, mules, and even by asses: while in Europe, the flail is generally employed. This implement is certainly preferable to the feet of animals, as it is not only more expeditious, but the labour is executed in a much cleaner mode than can be effected by the latter. It is very hard labour, but a machine has latterly been invented for the purpose, which, like much other machine,

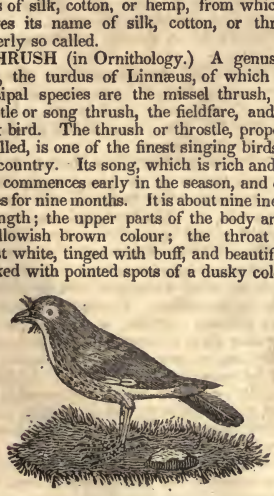
ry, diminishes employment for the mere profit of the grower or manufacturer. The engraving represents the common mode of thrashing by hand.



THRAVE, or THREAVE OF CORN. Twenty-four sheaves, or four shocks of six sheaves.

THREAD. A small line made of a few fibres of silk, cotton, or hemp, from which it derives its name of silk, cotton, or thread properly so called.

THRUSH (in Ornithology.) A genus of birds, the turdus of Linnæus, of which the principal species are the missel thrush, the throstle or song thrush, the fieldfare, and the black bird. The thrush or throstle, properly so called, is one of the finest singing birds in this country. Its song, which is rich and varied, commences early in the season, and continues for nine months. It is about nine inches in length; the upper parts of the body are of a yellowish brown colour; the throat and breast white, tinged with buff, and beautifully marked with pointed spots of a dusky colour.



THRUSH (in Medicine.) A distemper in the mouths of children.

THUNDER. The noise occasioned by the explosion of a flash of lightning passing through the air; or it is that noise which is excited by a sudden explosion of electrical clouds, which are therefore called thunder-clouds. The rattling in the noise of thunder, which makes it seem as if it passed through arches, is probably owing to the sound being excited among clouds hanging over one another, and the agitated air passing irregularly between them. The explosion, if high in the air, and remote from us, will do no mischief; but when near, it may destroy, and has in a thousand instances destroyed trees, animals, &c. This proximity, or small distance, may be estimated nearly by the interval of time between seeing the flash of lightning, and hearing the report of thunder, estimating the distance after the rate of 1,142 feet per second of time, or 3 2-3 seconds to the mile.

THUNNY. A kind of mackerel.

THURSDAY. The fifth day of the week, so called from Thor, the god of the Saxons and other northern tribes.

THYME. A fragrant herb.

TIARA, or PAPAL CROWN. An ornamental cap formerly worn by the Persians, and since adopted by the Pope. See PAPAL CROWN.

TIBIA. The largest bone of the leg.

TIC DOLOUREUX. A painful affection of the nerves.

TICK. A little insect, one species of which, called the dog-tick, infests dogs.

TIDE. The regular periodical current of water, which, when it rises, is called the flux, and when it goes back is the ebb or reflux. The ebbing and flowing of the sea was first shown by Kepler to be owing to the moon's attraction; and Newton demonstrated it upon the principles of gravitation. The attraction of the moon cannot alter the shape of the solid part of the globe, but it has a considerable effect upon the fluid part, which it causes to assume a spheroidal figure, the longer axis being in the direction of the moon. It is, therefore, the highest tide at that place perpendicularly under the moon, or where the moon crosses the meridian. The sun also has some action upon the waters, though its attraction, on account of its distance, is not so strong as that of the moon. When the action of the sun and moon conspire together, the tide rises higher, and produces what are called spring tides. On the contrary, when they counteract each other, they produce neap tides. The ocean, it is well known, covers more than one half of the globe; and a large body of water is found to be in continual motion, ebbing and flowing alternately, without intermission. What connexion these motions have with the moon we cannot here detail; in this place it will be sufficient to observe, that they always

follow a certain general rule. For instance, if the tide be now at high water mark in any port or harbour which lies open to the ocean, it will presently subside, and flow regularly back for about six hours, when it will be found at low water mark. After this, it will again gradually advance for six hours, and then return back in the same time to its former situation: rising and falling alternately twice a day, or in the space of about twenty-four hours. And by observing the tides continually at the same place, they will always be found to follow the same rule; the time of high water upon the day of every new moon being nearly at the same hour, and three quarters of an hour later every succeeding day.

TIDE WAITER. A custom-house officer who watches the landing of goods to see that the duties are paid.

TIER. A range of cannon mounted on one side of a deck.

TIERCE. A measure of liquids containing forty-two gallons.

TIGER. A large, ferocious beast, of the cat tribe, classed by Linnæus with the cat, under the generic name felis. It is a native of the hot climates of Asia, where it is considered as a scourge. It is of so fierce and sanguinary a nature, that it is not to be tamed. It is generally about six feet in length and three feet in height. The body of the tiger is yellow, striped with black; in strength it is little inferior to the lion. It lurks about marshy places, and usually sucks the blood of its victims before devouring them.

TILE. A thin piece of clay in a flat form, dried and baked so as to fit it for covering the roofs of houses.

TILLAGE The art and practice of cultivating the ground, by ploughing, harrowing, rolling, and other works of husbandry.

TILLER OF A SHIP. A piece of wood fastened in the head of the rudder, by which it is moved. In small ships and boats it is called the helm.

TIMBER. The wood of trees felled and seasoned for the use of the carpenter, as the wood of the oak, fir, elm, ash, beech, chestnut, walnut, lime, sycamore, and birch; of these, however, the oak, ash, and elm, are properly denominated timber trees.

TIME. The measure of motion, and of the succession of thoughts, determined on our globe by the phenomena of light and darkness, and returning seasons of heat and cold; the earth's motion round its axis being a day, and its motion round the sun a year; while the period from new moon to new moon determines the month. Longer periods are the moon's cycle of recurring phenomena in nineteen years, the earth's cycle, or the retrocession of the equinoctial points round the ecliptic in 25,600 years, or the revolution of the line of apsides in 20,900 years. These are periods of duration relative to our globe and to us, but different to different systems, and even to different animals and states on the same planet; yet all are included in a totality of simple duration common to the whole universe, and which totality is necessarily without measure, parts, beginning, or ending.

TIME (in Music.) A measure of three lengths, as slow, (or adagio,) quick, (allegro,) and very quick, (allegretto;) the bar in one case being equal to a semibreve, and in the other to a minim, the several notes being in their due proportions.

TIMEKEEPER. An instrument for measuring time.

TIN. A metal which is very rarely found native. It is of a silver-white colour very ductile and malleable, gives out, while bending, a crackling noise; is fusible at a heat much less than that of ignition, is soluble in muriatic acid, and by dilute nitric acid, is rapidly converted into a white oxide. It is one of the lightest metals, its specific gravity, when hammered, being no more than 7.299, but it is so fusible as to melt at about 442° of Fahrenheit.

TINCTURE. A solution of any substance in spirit of wine.

TINMAN. A manufacturer of tin.

TINNING. The art of covering iron or copper with a coat of tin, by immersing the plates into melted tin. This is one of the most useful purposes for which tin is employed, as it renders iron fit for various uses which, on account of its tendency to rust, would otherwise be unavailable.

TIN PLATE, otherwise called WHITE IRON. Iron covered with tin.

TIPSTAFFS (in Law.) Officers that attend upon courts, and also take persons into custody.

TIRE. The iron brace that goes round a wheel.

TISSUE. Stuff made of silk and silver.

TITANIUM. A newly discovered metal of an orange red colour. It is very brittle, but so refractory that it can scarcely be reduced.

TITHE. An allowance of a tenth of produce to the Jewish priesthood, adopted in the Romish church to enable the clergy to maintain themselves and the poor.

TITHING. A community of ten men, into which all England was divided in the time of the Saxons.

TITLE (in Law.) Any right which a person has to the possession, or an authentic instrument whereby he can prove his right.

TITMOUSE. A small bird which feeds on the brains of other birds, which it attacks with great ferocity.

TOAD. A reptile of unsightly appearance, which was formerly accounted venomous, but now considered as harmless. It is nearly allied to the frog, with which it is classed by Linnæus, under the generic name rana. The frog is nimble, and leaps to a great distance; but the toad hops lazily, and strives in vain to elude pursuit. Live toads have been found enclosed in blocks of stone and marble, where they must have remained without food for many centuries.

TOBACCO. An herbaceous plant, remarkable for its narcotic properties. Segars

and chewing tobacco are made of the leaves of this plant, which, when ground and scented, forms snuff. It originally came from America, and was introduced into England by Sir Walter Raleigh.

TODDY. A compound spirituous liquor.

TOGA. The mantle worn by Roman citizens.

TOLERATION ACT. An act passed in the reign of William and Mary in favour of dissenters.

TOLL. A payment in towns, markets, and fairs, in England, for goods and cattle bought and sold; also, on passing through a turnpike gate.

TOLUFERA. A balsam of the tolu tree, less healing and stimulating than the balm of Gilead.

TOMBAC. A metal composed of copper and arsenic.

TON. Twenty hundred weight.

TONE. The degree of elevation which any sound has, so as to determine its acuteness or gravity.

TONGUE. A soft fleshy viscus, which is the organ of taste and speech in man.

TONIC. A medicine which braces the nerves.

TONNAGE. The burthen of a ship in tons; also, a duty paid at a certain rate for every ton of goods exported or imported.

TONSURE. The act of cutting off the hair.

TONTINE. A variable kind of life annuity, but generally so contrived as to be progressively increasing in amount. It is formed by nominating a certain number of lives within limited ages, who for each hundred pounds or any other gross sum paid down, are to receive at first a specific annuity; but as any of the lives fail, their annuity is to be equally divided among those that remain, by which means those individuals who happen to survive a considerable number of years, obtain a large augmentation of their annual receipt; and the longest liver of the whole (if there is no restriction to the contrary) gets, for the remainder of his life, the total sum which was paid at first to all the nominees.

TOPAZ. A precious stone of a yellow colour. It is harder than quartz, but not so hard as ruby; varies considerably in its crystallization; is 3½ times heavier than water; and when placed upon any object, shows a double image of it.

TOPICS. Common places, or the heads of a discourse.

TOPOGRAPHY. A description or draught of some particular place or tract of land, as of any particular county, city, town, &c.

TORNADO. A sudden and vehement gust of wind from all parts of the compass, frequent on the coast of Guinea. It commences very suddenly, several clouds being

previously drawn together, when a gust of wind rushing from them strikes the ground in a round spot of a few perches diameter, and thus proceeds for the distance of a mile or more, not in a straight line, but in all directions, tearing up all before it.

TORPEDO. A fish which is endowed with a strong electric power. It gives a smart shock to a person who handles it, similar to that produced by the electrical machine. The body of this fish is nearly circular. It is sometimes so large as to weigh betwixt seventy and eighty pounds. The skin is smooth, of a dusky brown colour, and white underneath.

TORPEDO, otherwise called the INFERNAL MACHINE (in Naval Affairs.) An invention contrived by an American for the purpose of blowing up the British vessels by a submarine explosion.

TORRID ZONE. That region at the distance of twenty-three and a half degrees from the equator, where on certain days the sun passes vertical.

TORTOISE, LAND. This animal is common in America. It is covered with a strong shell, and sometimes lives a hundred and twenty years. It is about six inches in length.

TORTOISESHELL. The shell which covers the tortoise is used in inlaying and for various other purposes, as snuff-boxes, combs, &c.

TORY. One of a political party in England, who espouse the policy of the court against the whigs, who sustain the rights of the people against the court.

TOUCAN. A bird of South America about the size of a jackdaw with a large head and monstrous bill, of a yellow, scarlet, and purple colour; its body is black, it feeds principally on pepper, and it is easily domesticated.

TOUCH, or FEELING. One of the five senses, which is formed by the nervous papillæ of the skin. The sensations acquired by the sense of feeling are those of heat, hardness, solidity, roughness, dryness, motion, distance, figures, &c.

TOUCH (in Coining.) A trial of gold and silver in the Mint.

TOUCHHOLE. The vent through which the fire is conveyed to the powder in a gun.

TOUCH-NEEDLE (among Assayers and Refiners.) Little bars of gold, silver, and copper, combined together in all the different proportions and degrees of mixture. These are used in the trial called the touch, to discover the purity of any piece of gold or silver by comparing the mark it leaves on the touchstone with those of the bars.

TOUCHSTONE. A siliceous sort of stone used in trying metals.

TOUCHWOOD. A sort of agaric, or decayed wood, that is used as tinder.

TOURNAMENTS. Military sports, in the days of chivalry, where knights used to display their gallantry by encountering each other on horseback with spears or lances.

TOURNIQUET. An instrument for stopping the flow of blood after an amputation.

TOWER. A fortress or citadel, as the Tower of London.

TOXICOLOGY. The doctrine of poisons.

TRACHEA. The windpipe, a cartilaginous and membranous canal, through which the air passes into the lungs.

TRADE WINDS. The monsoons, or certain regular winds blowing within or near the tropics, and being either periodical or perpetual. Thus, in the Indian Ocean, they blow alternately from two opposite points of the compass, and in the Atlantic Ocean continue almost without intermission in one direction.

TRAGACANTH. A gum which exudes from a prickly bush, the astragalus tragacantha of Linnæus which grows wild in warm

climates. The tragacanth is mostly brought from Turkey in lumps.

TRAGEDY. A drama representing some grand and serious action, and mostly terminating in some fatal event.

TRAJECTORY. The path described by any moving body, as a comet describing a curve.

TRAIN. A line of gunpowder forming a communication with any body that is to be set on fire.

TRAMMEL. A drag net, or large fishing net; also, a long net for catching birds.

TRAMMELS. An instrument for drawing ovals on a board; also, a kind of shackles for a horse.

TRANSCRIPT. The copy of any original writing.

TRANSFER. The making over stock, &c. from the seller to the buyer.

TRANSFER DAYS. Particular days appointed for the transfer of particular stocks.

TRANSFORMATION. The change out of one form into another, as applied to insects.

TRANSIT. The passage of any planet just by or over a fixed star or the sun's disc, particularly the transits of Mercury and Venus, which are interesting phenomena.

TRANSITIVE VERB. A verb which in its meaning passes over to an object, as to love or hate.

TRANSMIGRATION. The passing of the human soul out of one body into another, a doctrine which is ascribed to Pythagoras.

TRANSMUTATION. A supposed power of changing the base metals into gold, which alchymists pretended to possess.

TRANSMUTATION (in Chymistry.) Any operation by which the properties of mixed bodies are changed.

TRANSPARENCY. The property of some bodies of giving passage to the rays of light, as distinguished from opacity.

TRANSPARENCY (among Painters.) Any painting illuminated behind, so as to render it perfectly visible at night.

TRANSPORT. A vessel in which soldiers are conveyed by sea.

TRANSPORTATION (in Law.) Sending away criminals into a distant country, either for a term of years or for life.

TRANSPORTATION (in Commerce.) The carrying of goods by land to a distance.

TRANSPOSITION (in Music.) The change made in a composition by which the whole is removed into a higher or lower key.

TRANSPOSITION (in Algebra.) The bringing any term of an equation over to the other side.

TRANSUBSTANTIATION. The conversion of the bread and wine, according to the doctrine of the Romish church, into the actual body and blood of Christ, which is supposed by them to be miraculously wrought by the consecration of the priest.

TRANSVERSE. A cross, as a tranverse axis in conic sections.

TRAP. A sort of mountain rock, composed of horizontal strata.

TRAPEZIUM. An irregular quadrilateral figure.

TRAVERSE (in Law.) That which the defendant pleads in bar to avoid the plaintiff's bill.

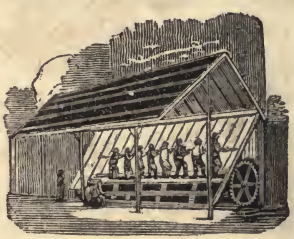
TRAVERSE (in Fortification.) A trench made quite across the mote of a place.

TRAVERSE (in Navigation.) The variation or alteration of a ship's course.

TRAVESTIE. The burlesque imitation of an author's style and composition.

TREACLE. The fluid parts of sugar-cane, which will not crystallize; molasses.

TREADMILL. A mill for grinding corn, which is moved by persons stationed on the main wheel. It has been introduced into prisons as a sort of punishment.



TREASON (in Law) Is divided into High Treason and Petty Treason. High Treason is a conspiracy to overturn the lawful authority, or committing any open act which plainly manifests such a design. Petty Treason is the crime of a wife killing her husband, or a servant his master.

TREASURER (in Law.) An officer to whose care the treasure of a government or of any company is committed.

TREASURY. The funds of a state or nation; in England, conducted by Lords Commissioners, the head commissioner being usually considered as the prime minister. In the United States the public revenues are managed by the Secretary of the Treasury.

TREBLE (in Music.) The acutest or highest note adapted to the voice of females or boys.

TREBLE NOTE. The note in the treble stave, placed on the line with the cliff.

TREE. A solid trunk or stem, springing from a root, with branches and leaves, from 20 to 100 feet high, and living from 50 to 500 years. The leaves fix the gases, like the lungs

of animals, and the circulations are in some respects similar.

TREFOIL. Three leaved grass.

TRELLIS. A frame of lattice, or crossbarred work, used to support plants.

TREMOLITE. A sort of calcareous earth.

TRENCHES. Ditches in fortifications.

TREPAN. A surgical instrument, like a saw, for removing a broken bone from the skull.

TRESPASS (in Law.) Any wrong done by one private man to another, either to his person or his property.

TRET. An allowance for waste, or for the dirt that may be mixed with any commodity.

TRIAD (in Music.) The common chord, consisting of the third, fifth, and eighth.

TRIAL. The examination of causes before a proper judge, which, as regards matters of fact, are to be tried by a jury, as regards matters of law by the judge, and as regards records by the record itself.

TRIANDRIA. One of the Linnæan classes, comprehending plants the flowers of which have three stamens, as the crocus, gladrole, valerian, &c.

TRIANGLE. A figure bounded by three sides.

TRIBUNE. An officer among the Romans, chosen from among the people to defend their rights.

TRICOCCÆ. One of Linnæus' natural orders of plants, comprehending such as have a three armed capsule, as the euphorbia, &c.

TRIDENT. A three forked instrument.

TRIENNIAL. Every third year.

TRIGGER. The catch of a gun lock, which, when pulled, disengages the cock and causes it to strike fire.

TRIGLYPH. A member of the Doric frieze.

TRIGONOMETRY. The science by means of which one part of a triangle may be determined by knowing the other parts, and, therefore, of great use in land surveying, navigation, astronomy, &c.; for as the sides depend on the angles, the proportions of the sides are the same, and, therefore, tables are calculated to apply to all triangles. In spherical trigonometry, the sides are referred to the centre of the earth.

TRILLION (in Arithmetic.) A billion of billions.

TRIM OF A SHIP. Her best posture, proportion of ballast, and hanging of her masts, &c. for sailing.

TRINITARIANS. Those who believe in the Trinity.

TRINITY. The doctrine of three persons in the Godhead, namely, the Father, the Son, and the Holy Ghost.

TRIO (in Music.) A piece for three voices.

TRIPLE CROWN. The tiara, or papal crown.

TRIPLE TIME (in Music.) A time consisting of three measures in a bar.

TRIPOD. The sacred seat, supported by three feet, on which the priestesses among the ancients used to deliver the oracles.

TRIPOLI. A mineral of an earthy texture, but for the most part found considerably indurated. It is used as a polishing powder.

TRISECTION. The dividing a thing into three parts.

TRISYLLABLE. A word consisting of three syllables.

TRITON. A sea god.

TRIUMPHAL CROWN. A crown among the Romans given to a victorious general; it was made at first of wreaths of laurel, and afterwards of gold.

TRIUMVIRATE. A form of government in which three persons bear rule, as the Roman triumvirate of Pompey, Cæsar, and Crassus, and afterwards that of Augustus, Mark Anthony, and Lepidus.

TROCAR. An instrument used in tapping for the dropsy.

TROOP. A certain number of horse soldiers.

TROOPER. A horse soldier.

TROPICS (in Astronomy.) Circles drawn at the distance of twenty-three and a half degrees on each side of the equator, that on the north side called the Tropic of Cancer, that on the south the Tropic of Capricorn.

TROPICS (in Geography.) The regions on the earth which lie within the tropical circles, about 1600 miles on each side of the equator, over some part of which the sun passes directly vertical two days in the year. It is the hottest, wettest, and most fertile part of the earth, but less favourable to human life than the temperate zones. Its heats are, however, tempered by elevation, and by winds which constantly follow the sun from east to west, and from their convenience to ships are called Trade Winds. In the plains the heat varies from 120 to 80 degrees, and is seldom below 65. But at great elevations snow lies all the year.

TROUBADOURS. Ancient bards of Provence and Normandy, who wrote verses and set them to music.

TROVER. An action which a man has against any one who having found his goods,

or having them unjustly in his possession, refuses to deliver them up.

TROUGH. A hollow piece of wood, which serves to hold water or any other fluid.

TROUT. A delicate fish, abounding in the rivers and ponds of America and England, and weighing from 1 to 15 pounds. It has a wide mouth, filled with teeth, which cover the palate and tongue; the scales are small, the back ash coloured, the sides yellowish, and, when in season, it is sprinkled all over the body with small, beautiful red and black spots. Anglers use worms or artificial flies as bait to take them.

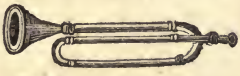
TROWEL. A bricklayer's tool for spreading mortar.

TROY WEIGHT. A weight of twelve ounces to the pound, twenty pennyweights to the ounce, and twenty-four grains to the pennyweight, used for weighing gold and silver. It is so called from Troyes, a town in France.

TRUCE. A suspension of hostilities.

TRUFFLES. A sort of mushrooms.

TRUMPET. The loudest of all wind instruments, consisting of a folded tube, generally of brass.



TRUMPETER. The soldier who sounds the trumpet.

TRUMPETER-BIRD. A bird of South America, so called from its harsh cry, like a child's trumpet.

TRUSS (in Surgery.) An elastic bandage worn in cases of hernia or ruptures.

TRUSS (among Mariners.) A machine for pulling a yard home to the mast.

TRUSTEE (in Law.) One who has an estate or money put into his hands for the use of another.

TUBE. Any pipe or canal which serves as a passage for air or any other fluid.

TUFAS. Beds of lime.

TULIP. A well known, beautiful flower, the roots of which, when first introduced into Europe, brought extravagant prices.

TUMBRIL. A carriage for war tools.

TUMOUR. A swelling, or morbid enlargement of any part of the body.

TUN, or TON. A vessel for wine and other liquors; also, a certain measure of capacity, containing 242 gallons; also, a weight equal to 2240 pounds, whereby the burden of ships is estimated.

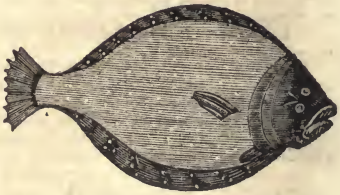
TUNIC. An under garment in use among the Romans.

TUNING (in Music.) Rectifying the false sounds of musical instruments.

TUNGSTEN. An opaque mineral of a white colour and great weight, composed of lime and other earthy substances.

TUNNEL. A subterraneous passage cut through hills, mountains, and even in some cases under water.

TURBOT. A well known fish, inhabiting the European seas, which grows to thirty pounds weight. It is much esteemed for the delicate taste, firmness, and sweetness of its flesh. This fish is sometimes two feet and a half long, and about two broad. The scales on the skin are so very small that they are hardly perceptible. The colour of the upper side of the body is a dark brown, spotted with dirty yellow; the under side a pure white, tinged on the edges with somewhat like flesh colour, or pale pink.



TURK. A native of Turkey, an extensive empire, comprising the south eastern extremity of Europe, the western extremity of Asia, Egypt, and the whole of the north coast of Africa, with numerous islands in the Mediterranean, containing in the aggregate from 12 to 15 millions of people. The Turks are of Tartar origin, bigoted, ignorant, and vicious,

and the most rigid disciples of the Mahometan faith. Individually, the Turks are a brave, honest, and amiable people, but the government is an absolute despotism, and as such is inimical to the progress of social improvement; but under the reign of Mahmoud the second, which commenced in 1808, many important changes were introduced indicative of a nearer approximation to the institutions of the western states of Europe.

TURKEY. A large domestic bird, the young of which are exceedingly tender. The cock is very proud and irascible, and struts about with his tail expanded when moved either by pride or anger.

TURKEY BUZZARD. This bird is larger than a raven, and is very common in the southern parts of the United States. It lives on filth and putrid flesh, and is so useful in clearing away offensive substances, as to be protected by law in the southern cities. It is a foul bird, and exceedingly voracious.

TURKEY, WILD. This noble bird was formerly common in all parts of this country, but is now seldom found except in the western territories. It is often larger than the domestic turkey; it goes in flocks, and feeds on grain, seeds, fruits, &c. The colour of the males, called gobblers by the hunters, is a dark brown. It is the original stock of the domestic turkey, and was carried to Europe many years after the discovery of America.

TURMERIC. A drug procured from an Indian tree, the curcuma of Linnæus, which is used in dying.

TURNER. One who follows the art of turning.

TURNING. The art of forming wood, ivory, and other hard substances into a round or oval shape, by means of a machine called a lathe, and several instruments, as gouges, chisels, drills, formers, and screw tales, with which the turner works the thing into the desired form as the lathe is turning.

TURNPIKE. A gate set across a road, through which all travellers passing either on horseback or in a conveyance must pay toll; also, the road which has such a gate.

TURNSOL, or TURNESOL. A valuable dyeing drug, which is prepared chiefly in the village of Grand-Galargues, near Montpellier, from the Croton Tinctorum, Lin., in French called Maurelle.

TURNSPIT. A species of the dog that used to be taught to turn a spit before the introduction of smoke jacks.

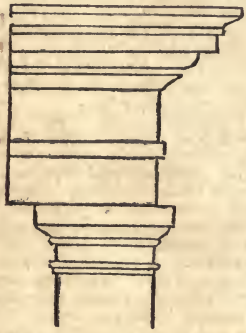
TURPENTINE. A resinous substance procured from different species of the pine and fir. The best sort is procured in North America. The method of obtaining it is by making a series of incisions in the bark of the tree, from which the turpentine exudes, and falls down into holes or other receptacles prepared to catch it.

TURTLE. A species of tortoise, with longer legs or fins. The green turtle is a harmless creature, and when laid on its back, quite helpless. They are eaten in the West Indies, and by epicures in the United States and in Europe, who esteem them a great luxury. The hawks-bill turtle affords the tortoise-shell, which on old ones is sometimes 10 pounds weight.

TURTLE DOVE. A bird of the pigeon species, rather smaller than the wild pigeon, and easily distinguished from it by the yellow iris of the eye and a beautiful crimson circle that encompasses the eyelids. Their note is tender and plaintive, and their affection for

their mate is such, that if a pair be confined in a cage, and one die, the other will refuse food, and also die.

TUSCAN ORDER. An order of architecture first used in Tuscany in Italy, which has but few ornaments or mouldings.



TUSCULANÆ QUESTIONES. Five books of Tully, so called from their being composed at Tusculum.

TUSCULUM. A city of Italy, about 13 miles from Rome, built on an eminence, where many of the Roman nobility, and particularly Cicero, Virgil, and Horace, had country seats.

TUSKS. The long pointed teeth that stand out of the mouth of some carnivorous animals.

TUTTY. A gray oxide of zinc.

TWILIGHT. That period of light between darkness and the rising or setting of the sun In our latitude it may be said to begin and end when the sun is about eighteen degrees below the horizon.

TWINE. A twisted thread.

TWINLING. A twin lamb, a lamb of two brought at a birth.

TWIST. Any thing made by convolution, or winding two bodies together.

TYMPAN. A frame belonging to a printing press.

TYMPANUM. The drum or barrel of the ear, in which are lodged the bones of the ear.

TYPES. Pieces of metal cut or cast, which are employed in printing. The simple invention of moveable, separate types, was one of the most important ever made by man.

TYPHUS. A violently contagious fever, accompanied with a tendency in all the fluids to putrefaction.

TYPOGRAPHY. A description of all that relates to the use of types in the formation of books; a history of the art of printing.

TYRANNICIDE. The act of killing a tyrant.

TYRANT. An absolute monarch governing imperiously; a cruel, despotic, and severe master.

TYRO. One not yet master of his art; one in his rudiments.

U AND V.

U or V, the twentieth letter in the alphabet, stands as a numeral for 5, and formerly with a dash over it, thus $\overline{V}$, for 5000; as an abbreviation, V. G. Verbi gratia, V. L. videlicet, &c.

VACATION (in Law.) The period between the end of one term and the beginning of another; and the same in the Universities.

VACCINATION. Inoculation with the cow pock, intended as a preservative against infection from the small pox.

VACUUM (in Philosophy.) A space supposed to be devoid of all matter or body.

VADE MECUM. The name of any small book that may be carried about with one.

VAGRANTS (in Law.) Beggars, strolling and idle persons who wander from place to place, without any visible means of support.

VALET. Formerly a young gentleman of family, but now applied to a serving man of low degree.

VALLAR CROWN. A crown bestowed among the Romans on a general who first entered an enemy's camp.

VALVE. A small trap-door which is hung by hinges, and placed within a pump, or connected with the working piston, by means of which water is admitted when it opens, and its escape prevented when shut.

VALVES (in Conchology.) The principal pieces of which a shell is composed; by their shells they are distinguished into univalves, for such as have only one piece; bivalves, for those that have two pieces; and multivalves, for those that have three or more pieces.

VALVE, SAFETY. An orifice which allows the escape of steam when at a pressure below the strength of the boiler, by which escape the boiler is prevented from bursting.

VAMPIRE. An animal of the bat tribe, which sucks the blood of animals.

VAN (in the Army.) The front of the army, or the first line.

VAN (in the Navy.) The foremost division of a naval armament.

VAPOUR. A watery exhalation that, being rarefied by heat, ascends to a certain height in the atmosphere.

VARIATION (in Geography and Navigation.) The variable declination of a magnetic needle from the true north and south. At London, in 1576, it was 11° 15′ east; in 1662, it was 0; but in 1817, it was 24° 18′ west, and is now diminishing. In the latitude of England, the western variation extends to 244° 44′, and the eastern 115° 16′. The causes of this varying variation are among inscrutable phenomena; but it doubtless arises from some connexion between the obliquity of the ecliptic, and the causes of polarity, which are connected with the earth's motion, and a subordinate electrical action.

VARIETY. Any individual plant or animal that differs from the rest of the species in some accidental circumstances.

VARIORUM EDITIONS. Editions of the Greek and Latin authors, with the notes of different critics.

VARNISH. A thick, viscid, shining liquor, used by painters and other artificers to give a gloss to their works. Resin is the principal constituent of varnish.

VASE. An ornamental urn.

VASES (in Architecture.) Ornaments placed on cornices, socles, or pediments, representing such vessels as the ancients used in sacrifices, &c.

UBIQUITY. The property of being every where; the attribute of God.

UDDER. The milk bag of a cow or other four-footed beast.

VEGETABLE. An organic body destitute of sense and spontaneous motion, but furnished with pores and vessels, by the help of which it draws nourishment from other bodies.

VEGETABLE MARROW. The fruit of a plant of the gourd kind growing in Persia. Its flesh is very tender, soft, and of a buttery quality.

VEIN (among Miners.) A space containing ores, spar, clay, &c.; when it bears ore it is called a quick vein, when no ore a dead vein.

VEINS (in Anatomy.) The long membraneous canals which return the blood from the arteries to the heart.

VELLUM. The finest kind of parchment.

VELOCITY. That affection of motion whereby a moveable body is disposed to run over a certain space in a certain time, which as greater or less determines the momentum, all force being a compound of velocity and quantity. Light moves at the rate of twelve millions of miles in a minute; the earth in its orbit 68,000 an hour; sound 1142 feet in a second; wind, in a storm, 120 miles an hour; a ball from a cannon 2000 feet per second; a bullet from a gun 1600 feet; hawks, &c. 150 miles an hour; pigeons 80 miles; crows 25 miles; swallows 100 miles; and a race-horse 50 miles an hour.

VELVET. A sort of fine shagged silk.

VENA CAVA, the HOLLOW VEIN (in Anatomy.) The largest vein in the body, so called from its great cavity or hollow space into which, as a common channel, all the lesser veins, except the pulmonary, empty themselves. This vein receives the blood from the liver and other parts, and carries it to the heart.

VENA PORTA. The great vein situated at the entrance of the liver.

VENEERING. A kind of inlaying of thin slices of costly woods of different kinds and colours.

VENTILATOR. A contrivance for supplying rooms with fresh air.

VENTRICLE. A cavity of the heart or brain.

VENTRILOQUIST. One who by art, or by a particular conformation of organs, is enabled in speaking to make the sound appear to come from the stomach, or from a distance.

VENUE (in Law.) The neighbourhood whence juries are to be summoned for the trial of causes.

VENUS. The goddess of beauty, and daughter of Jupiter.

VENUS (in Astronomy.) The second planet of the solar system, 68 millions of miles from the sun, round which it revolves in 225 days, in a plane inclined to the ecliptic 3° 23′; the diameter is nearly that of the earth, and the rotations on the axis is performed in 23 hours 21 minutes, as appears by the spots and high mountains visible on the surface through a powerful telescope. Venus is the most brilliant of the planets in mornings and evenings, though, as only half of her enlightened side is turned to the earth, she appears but as a half moon. She is marked by this character ♀.

VEPRECULÆ. One of Linnæus' natural orders, containing briarlike plants, as the bramble, thorn, &c.

VERB. A part of speech which serves to express action, passion, or existence; it is either active, passive, or neuter.

VERBATIM. Word for word.

VERDICT. The report or determination of a jury upon any cause.

VERDIGRIS. An acetate of copper used as a pigment; it is the rust of brass gathered by laying plates of that metal in beds with the husks of pressed grapes, and then scraping it off the plates.

VERDITER. A green paint.

VERGER. An officer of a cathedral, who carries a rod before the bishop.

VERJUICE. The expressed juice of the wild apple or crab.

VERMES. Worms, a class of animals in the Linnæan system, that are slow of motion, of a soft substance, extremely tenacious of life, capable of reproducing parts that have been destroyed, and inhabiting moist places.

VERMICELLI. A kind of paste made of flour, cheese, eggs, &c. drawn out like small twine, and dried. It is used by the Italians in soup.

VERSE. A line in poetry, consisting of a number of long and short syllables; also, the divisions of a chapter in the Bible.

VERSIFICATION. The art and practice of making verses.

VERSION. A translation out of one language into another.

VERT (in Heraldry.) The colour of green on coats of arms, represented in engravings by lines drawn from the dexter chief to the sinister base.

VERTEBRÆ. A chain of little bones reaching from the neck down to the back, and forming the spine.

VERTEX (in Geometry.) The top of any line or figure, as the vertex of a triangle.

VERTEX (in Anatomy.) The crown of the head.

VERTICAL. Pertaining to the vertex or zenith: a star is said to be vertical when it is in the zenith.

VERTICAL CIRCLE. A great circle of the sphere passing through the zenith and nadir, and cutting the horizon at right angles.

VERTICAL POINT (in Astronomy.) That point in the heavens which is over our heads, otherwise called the zenith.

VERTICELLATÆ. One of the Linnæan natural orders of plants, including those whose flowers grow in the form of a whorl, as the mint, &c.

VERTIGO. Giddiness.

VERVAIN. A perennial, a sort of mallow.

VESICLE. Any small vessels, either in the animal body or in plants.

VESPERS. The evening prayers in the Romish church.

VESPERTILIO. A genus of animals in the Linnæan system, comprehending the species of the bat and the vampire.

VESSEL. Any sort of utensil used for holding liquids.

VESSEL (among Mariners.) Every kind of ship, large or small, that serves to carry men or goods on water.

VESSELS (in Anatomy.) The conduits or canals for conveying the blood or other juices to the different parts of the animal body, as the arteries, veins, &c.

VESSELS (in Botany.) The channels or reservoirs which convey the sap or air to different parts of plants for their nutriment.

VESTA (in the Heathen Mythology.) The daughter of Rhea and Saturn, and the goddess of fire.

VESTA. A newly discovered planet.

VESTAL VIRGINS. Priestesses to the goddess Vesta among the Romans, to whom was committed the care of the vestal fire.

VESTIBULE. The entrance to a house, or an open space before a door.

VESTIBULUM. A cavity in the bone of the ear.

VESTRY. A small apartment adjoining a church, where the vestments of the clergymen are kept, and where the church business is transacted; also, a certain number of persons permanently appointed to conduct the affairs of the church.

VESUVIAN. A mineral found in lava, especially on Mount Vesuvius, which is often confounded with hyacinth; the primitive form of its crystal is a cube. It is generally of a reddish brown, similar in appearance to common garnet.

VESUVIUS. A volcanic mountain, near Naples, celebrated for its frequent eruptions in ancient and modern times.

VETCH. A kind of pulse or peas, bearing a papilionaceous flower.

VETERINARY ART, otherwise called FARRIERY. The art of managing cattle, and curing their diseases, whence a veterinary surgeon, vulgarly called a horse doctor or farrier, and the veterinary college, where horses are taken in for cure, and persons resort to acquire practice and information in all that relates to the care of animals. The principal diseases to which horses are subject are the water farcy, or dropsy of the skin; ascites, or dropsy of the belly; broken wind, supposed to arise from a rupture of the cells in the lungs; cracks in the heels, from gross habit or from filth; farcy, an infection of the skin; foot-foundering, when a horse is unable to rest on any of his feet; greasy heels, from weakness or overlabour; lampers, a swelling of the bars in the roof of the mouth; mange, an affection of the skin, when the hair falls off; staggers, a sort of lethargy, and mad staggers, a sort of frenzy from a pressure on the brain; strangles, a disease attended with a fever, cough, and running at the nose; thrush, a discharge from the frog of the foot; pole evil, arising from friction of the collar at the back of the ears; besides inflammations, fevers, dysenteries, and other disorders which they have in common with human subjects.

VETURINO. A hirer of horses in Italy; also, a guide to travellers.

V. G. Verbi gratia, as for instance.

VIA LACTEA. The milky way.

VIBRATION. The alternate motion of any suspended body, like the pendulum of a clock, which swings this way and then that. The regular motion of the pendulum of a clock is 3600 vibrations in an hour. Vibration is also a quivering motion that acts by quick returns.

VICAR (in Law.) One that acts in the stead of another; more particularly taken for the parson of a parish, in England, where the tithes are impropriated.

VICE (in Smithery.) An instrument used for holding fast any piece of iron which the artificer is working upon.

VICE (among Glaziers.) A machine for drawing lead into flat rods for case windows.

VICE. In the stead or turn; hence the compound vice gerent, vice admiral, &c.

VICEADMIRAL (in the English Navy.) The second commander in a fleet; the admiral who commands the second squadron in a fleet.

VICEGERENT. A governor acting with a delegated power.

VICEROY. The lord lieutenant of a kingdom, as the Viceroy of Ireland.

VICE VERSA. On the contrary, the side being turned or changed.

VIDELICET, generally written VIZ. That is, namely.

VI ET ARMIS (in Law.) By force of arms, terms in an indictment charging a forcible and violent commission of trespass.

VIGIL. The service used in the Romish church on the night preceding a holyday.

VIGILS. Certain fasts preceding festivals.

VIGNETTE. A frontispiece, or an ornamental picture fronting the title page.

VILLEINS. Men of base and servile condition, who in the feudal times were immediately attached to the land, and bound to the lord to do services for him.

VINCULUM (in Algebra.) A mark or line drawn over a quantity, thus, $\overline{a+b}$, denoting it to be one quantity.

VINE. A plant that flourishes most in warm countries, as Italy, Spain, Portugal, and France, where its cultivation forms a part of husbandry. It grows in those parts in the open fields, and is not suffered to rise much higher than gooseberry or currant bushes. The fruit of the vine is there an important article of trade.

VINEGAR. Wine or any other liquor exposed to the sun until it has become acid.

VINEYARD. A place set apart for the cultivation of the vine.

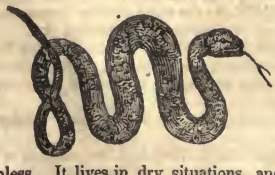
VIOL. A musical stringed instrument.

VIOLET. A plant bearing a blue, sweet scented flower; also, the colour of the violet, or purple.

VIOLIN. A common musical stringed instrument, which requires great skill in the performer to make it agreeable.

VIOLONCELLO. A small bass viol.

VIPER. An animal of the snake tribe, the bite of which is more or less venomous every where; in hot countries it is almost instantly fatal. It is the only poisonous snake in the British Islands, the others being perfectly



harmless. It lives in dry situations, and is from two to three feet long; the colour of its body is a dirty yellow, and its back and sides are marked with black spots, which are of the rhomboidal form on the back, and triangular at the sides, while the belly is entirely black; its head is thicker than the body and its tail is pointed.

VIRGO. The sixth sign of the zodiac, marked thus ♍, and a constellation containing from 32 to 110 stars, according to different authors.

VIRTUOSO. One skilled in antique or natural curiosities; a lover of the liberal arts.

VISCERA. The intestines.

VIS INERTIÆ. The power in bodies that are in a state of rest to resist any change that is endeavoured to be made upon them. This, according to Newton, is implanted in all matter.

VISCOUNT. A nobleman next in degree to an earl. The first viscount was created in the reign of Henry VI.

VISCOUNT'S CORONET. Has neither flowers nor points raised above the circle, like those of superior degree, but only pearls placed on the circle itself.

VISCUS. Any organ having an appropriate use in the human body, as the liver, gall, bladder, &c.; but particularly the intestines.

VISION. The sensation in the brain produced by the rays of light passing or acting on the optic nerves of the eye.

VISUAL ANGLE. An angle under which an object is seen.

VISUAL POINT. A point in the horizontal line wherein all the ocular rays unite.

VITAL AIR, now called OXYGEN. The air of which the atmosphere is principally composed, which is essential to the support of life in animals and plants.

VITAL FUNCTIONS. Those functions or faculties of the body on which life immediately depends.

VITREOUS HUMOUR. The pellucid body which fills the whole bulb of the eye behind the crystalline lens.

VITRIOL. A salt, of a very caustic taste. It is a sulphate generally found in mines in a capillary state, or in a loose powdery efflorescence. The three principal sorts are the green vitriol, copperas, or sulphate of iron; the blue vitriol, or sulphate of copper; and the white vitriol, or sulphate of zinc.

VITRIOL, OIL OF. Sulphuric acid.

VITUS' DANCE, or ST. VITUS' DANCE. A nervous disease, accompanied with involuntary gesticulations.

VIVA VOCE. By word of mouth.

VIVIPAROUS. An epithet for animals which bring forth living young.

ULCER. A purulent wound or running sore.

ULLAGE. A want of measure in a cask.

ULTIMATUM. The final conditions on which any party consents to treat for peace.

ULTRAMARINE. The finest sort of blue paint, prepared from lapis lazuli. Its colour is not affected by the atmosphere, and as such it is highly esteemed by painters. It is known by the same name all over Europe.

UMBEL. A sort of inflorescence like an umbrella.

UMBELLATÆ. One of the Linnæan natural orders, comprehending umbelliferous plants, or those which have flowers in the form of an umbel, as fennel, dill, &c.

UMBER. Brown ochre, used to make a common brown paint.

UMBRELLA. A kind of screen held over the head to keep off the sun and rain. It was introduced into England at the close of the last century.

UNA VOCE. With one voice, unanimously.

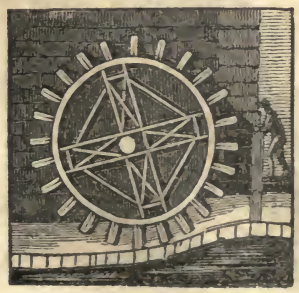
UNCTION. Anointing with consecrated oil, a practice among the Jews in consecrating kings and priests; also, still in use at coronations, and in the Romish church on different occasions. The anointing of persons who are on their deathbed is called extreme unction.

UNCTUOUS. Oily, or like an ointment.

UNDECAGON. A figure having eleven sides.

UNDER SHERIFF. An assistant to the high sheriff.

UNDERSHOT WHEELS. Those wheels which are acted upon by a stream at the bottom, overshot ones acting by a stream at the top. Undershot wheels require a much greater body of water than overshot; the former are consequently constructed near rivers, and the latter by streams of water. The application of water to mechanical purposes in the grinding of corn, fulling of cloth, dressing of leather, spinning of cotton, wool, &c. deserves to be ranked among the most important inventions of man.



UNDERTAKERS. Persons who conduct funerals.

UNDERWRITER. The person who undertakes to insure against losses at sea.

UNDULATION. The tremulous or vibratory motion in a liquid.

UNICORN. A fabulous animal said to have but one horn, and that in the forehead.

UNISON. Unity of sound, mostly applied to that which proceeds from different voices.

UNIT. A figure expressing the number one.

UNITARIANS. Those who deny the divinity of our Saviour, and consequently the doctrine of the Holy Trinity.

UNIVALVE. A shell consisting of one valve or piece, as snails, &c.

UNIVERSITY. An institution established by public authority for the education of youth in the liberal arts, and conferring degrees in the several faculties. Every college has its master and tutors, and public lectures by professors in every established branch of knowledge.

VOCAL MUSIC. Musical sounds proceeding from the human voice; also compositions for the voice.

VOCATIVE CASE. The fifth case in Latin nouns.

VOLATILE. An epithet for bodies that are apt to evaporate.

VOLATILE ALKALIES. Ammonia and carbonic acid.

VOLATILIZATION. The process by which bodies are resolved into air.

VOLCANO. A burning mountain which sends forth flame, ashes, lava, stones, smoke, &c. In many places inflammable materials appear to exist beneath the outer crust of the earth, which access of water, air, or pressure, excites into combustion. They are supposed to consist of the inflammable bases of metals, which ignite by access of water, and then expanding into steam, they shake the granitic foundations, and sometimes bursting through, produce all the destructive effects of earthquakes and volcanoes. They break forth under the sea as well as the dry land, and throw up mountains which rise above the level of the water, causing tremblings of the coasts. The extent of the action is often 500 or 600 miles, and its effect on sea and land, frightful and destructive. Earthquakes always precede volcanic eruptions, and perhaps some eruption or escape of steam or gases always creates them. An open volcano probably diminishes the force of earthquakes by the vent which it affords. There are about 150 known volcanoes, and three famous ones in Europe; Etna, Vesuvius, and Hecla; but many districts show the former existence of others, and part of Bath, in England, stands on the crater of an exhausted volcano. Many islands are entirely volcanic; and many dis-

ruptions of strata appear to have arisen from explosions whose materials of combustion are now exhausted.

VOLTAIC BATTERY. See BATTERY.

VOLUME (in Music.) The compass of a voice from grave to acute.

VOLUME (in Literature.) A book, or any thing folded into the form of a book.

VOLUNTARY (in Music.) An extemporary performance upon the organ, introduced as an incidental part of divine service.

VOLUTE. A spiral scroll in the Ionic and Composite capitals.

VOMICA. See NUX VOMICA.

VOWEL. A letter which affords a complete sound of itself.

VOX POPULI. The popular or universal opinion.

URANIUM. A newly discovered metal, soft and brittle, but hardly fusible before the blowpipe; but with phosphate of soda and ammonia melts into a grass-green glass.

URETER. The membranous canal which conveys the urine from each kidney to the urinary bladder.

URETHRA. A membranous canal which serves as a passage for the discharge of the urine.

URN. A vessel among the Romans, in which they put the names of those who were to engage at the public games, taking them in the order in which they were drawn out. In such a vessel also they threw in the notes of their votes at the elections.

URSA. The name of two northern constellations, namely, Ursa Major and Ursa Minor, the Great and Little Bear.

URSUS. A genus of animals in the Linnæan system, including the bear, badger, raccoon, glutton, &c.

USANCE. A determinate time fixed for the payment of a bill of exchange, reckoned either from the day of the bill's being accepted, or from the day of its date, and so called because it is regulated by the usage or custom of the place.

USHER (in Law.) An officer who has the care and direction of the door of a court or hall.

USHER (in Schools.) An assistant or lower master.

USURY. The taking more interest for the loan of money than is allowed by law.

VULCAN. The son of Jupiter and Juno, and the god of fire. He is commonly represented with a hammer, anvil, &c.

VULGATE. A very ancient Latin translation of the Bible, which was translated from the Greek of the Septuagint. It is the only one acknowledged by the Romish church to be authentic.

VULTURE. A carnivorous bird that lives

on lizards, rats, &c. It mostly inhabits South America. The species called the King of the Vultures, is a native of America; it is larger than a turkey cock, and is remarkable for the odd formation of the skin of the head and neck, which are bare. The eyes are surrounded by a scarlet-coloured skin, and the iris has the colour and appearance of pearl. Below the naked part of the neck is a collar of feathers of a deep ash colour, which surrounds the neck and covers the breast in front; into this collar it sometimes withdraws its whole neck, and a part of its head. It is the most beautiful of the vulture kind, but its habits are the same as the rest of the tribe.

W.

W, the twenty-first letter of the alphabet, composed of two V's. It was not known to the Hebrews, Greeks, or Romans, being peculiar to the Teutones and other northern tribes.

WACKE. A rock nearly allied to basalt, of which it may be regarded as a variety.

WADD. Plumbago or black lead. Black wadd is an ore of manganese found in Derbyshire, England.

WADDING. A stopple of paper or tow forced into a gun, to keep in the powder and shot.

WAFER. Paste made of flour, eggs, isinglass, &c. cut into a thin round cake, and coloured, for the purpose of sealing letters.

WAFER (in the Romish Church.) A thin piece of consecrated bread used at the holy rite of the sacrament.

WAGES. Money paid for labour.

WAGON. A large kind of four-wheeled conveyance, much used in husbandry.

WAGTAIL. A bird that is continually wagging its tail.

WAIST. That part of a ship between the quarterdeck and forecastle.

WAITERS. Officers appointed to see that goods are not landed clandestinely. Those who go on board the vessels are called tide-waiters; those who do this duty on shore are land-waiters.

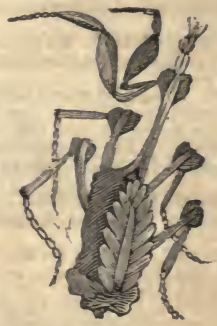
WAITS. Nocturnal musicians who attend great men.

WAKE. The feast of the dedication of the Church, formerly kept by watching all night.

WAKE OF A SHIP. The smooth water astern when she is under sail; this shows the way she has gone in the sea, whereby the mariners know what way she makes; for if the wake is right astern, they conclude that she makes her way forward; but if the wake is to the leeward a point or two, then they conclude she falls to the leeward of her course.

WALE. A rising part in cloth.

WALKING-LEAF. A most remarkable insect, found in China. Its head is placed on a neck longer than the body itself, and is shaped like an awl, with two polished eyes, and two feelers. The wings are transparent. This insect is generally of a beautiful green colour, which soon fades, and resembles a dead leaf; this causes the inhabitants to give it the name of the walking leaf.



WALKING. The power of animal locomotion, derived from nervous direction of the muscles, by which one set acts against the earth, and confers an equal power of re-action on another set; all animal strength being a mere transfer from a set of muscles acted upon by the earth to another set equally acting on the earth or some other body. Thus, by motion a man adds nothing to his weight in a pair of scales, and a weight put into his arms is not diminished by his energy in supporting it; for a man of 140 pounds carrying 60 pounds requires for a balance 200 pounds of weights in the opposite scale. Respiration and food create nervous excitement, this directs the muscles, and the muscles by action and re-action, like the two ends of a lever, produce animal strength and motion.

WALLFLOWER. A plant bearing a sweet-scented flower.

WALRUS. The sea cow; a species of amphibious animals, found in great numbers in the Northern Ocean, where they live in large societies, and are unsuspicious of danger till attacked. The attachment of the females to their young is very affecting when they are in danger.

WALTZ. A rolling kind of dance. It is mostly performed by the parties going with measured steps in circles.

WAMPUM. Shells, or strings of shells, used by the American Indians as money, or a medium of commerce.

WARD (in Law.) A district or portion of a city committed to the special charge of one of the aldermen: also, one in the care of a guardian, or in particular cases, under the special care of the Court of Chancery.

WARDEN (in Law.) One who has the charge or keeping of any person or thing by virtue of his office, as the warden of the Fleet, who has charge of the prisoners committed there; so likewise the warden of a college, or the warden of the Cinque Ports, &c.

WARDROBE. A place for keeping clothes; also, the clothes themselves.

WAREHOUSE. A place where merchandise is stored.

WARNING-WHEEL. The third or fourth wheel of a clock, according to its distance from the first wheel.

WARP. The thread extended lengthwise on the weaver's loom, which is crossed by the workman in forming the cloth, stuff, or silk.

WARRANT (in Law.) A writ commanding an officer of justice to take up any offender.

WARRANT OF ATTORNEY. An authority given to an attorney by his client to appear and plead for him.

WARRANT, Press (in the English Navy.) Is issued by the admiralty, authorizing an officer to impress seamen.

WARREN (in the English Law.) A franchise or privileged place for keeping beasts and fowls; also, a piece of ground appropriated to the breeding and preservation of rabbits.

WARWHOOP. The yell uttered by savages when entering into battle.

WASHING (among Goldsmiths.) Drawing particles of silver and gold out of ashes.

WASHING (among Painters.) Colouring a pencil design with one colour, as Indian ink, &c.

WASP. An insect resembling a bee, the female of which has a sting in its abdomen, which it employs when attacked or in supposed danger. Their nests are highly curious structures, divided into cells, with walls made of vegetable substances. As they do not lay up honey like bees, they die or are torpid in the winter. The hornet is larger than the wasp, and forms its nest in holes or roots of trees but both are equally voracious.

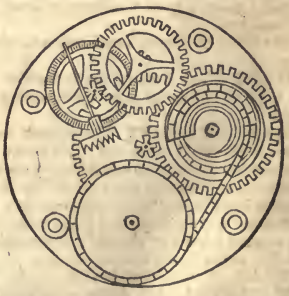
WASTE-BOOK. A book containing an account of a merchant's transactions in the order of time as they occur.

WASTE-LANDS. Such as are not in any man's occupation, that lie common.

WATCH (in the Navy.) The space of time during which one division of the ship's crew remains on deck, to keep watch at night.

WATCH (in the Police.) Persons appointed to guard the streets or particular places at night.

WATCH. A small pocket instrument, constructed with wheels, that serves to show the hour of the day. A watch consists of a spiral steel spring, which is the moving power; the barrel, a brass box for receiving the spring when coiled up; the worm-wheel, which is turned round by a worm; the fusee, which receives the chain when the watch is wound up; the ratchet wheel, at the lower end of the fusee; the great wheel, which has forty-eight teeth; the centre wheel, which has fifty-four teeth; the third wheel, which has forty-eight teeth; the contrate wheel, which has forty-eight teeth; and the balance wheel, which has fifteen teeth; besides the arbour of the balance wheel, called the verge, and the two pallets belonging to this arbour, &c. Watches were invented about the year 1500, and are much esteemed in all countries. Watches are manufactured to a great extent at Geneva, Paris, Liverpool, and Coventry. But it is in London where the art of watch-making reigns with unrivalled sway, both in extent and perfection. The extreme variation in two watches made in London by the same artist, was only from nine tenths of a second to 2-8″ in a temperature varying from 82° to 39°, according to an official report made from the Royal Observatory at Greenwich.



WATCH-GLASS. Hour and half hour glasses of sand, employed on board vessels to measure the period of the watch.

WATCHMAKER. One who puts together the different parts of a watch, so as to make the whole machine act.

WATCHMAN. One set to keep guard.

WATCHTOWER. A tower on which a sentinel is placed to watch for enemies or the approach of danger.

WATCHWORD. The word given to sentinels, and to such as have occasion to visit the guards, used as a signal by which a friend is known from an enemy, or a person who has a right to pass the watch, from one who has not.

WATER. A fluid of which a cubic foot weighs 1000 ounces, or 825 times more than a cubic foot of atmospheric air, the constituents of which are one part by weight of hydrogen and seven and a half of oxygen, and two parts by bulk of hydrogen, and one of oxygen. It becomes solid at 32° of Fahrenheit, and boils, or evaporates and becomes no hotter, at 212°, though by compression it has been heated red-hot. When expanded in steam, at 212° it acquires 1800 times its bulk, and presses with the force of atmospheric air; at 226° it expands 9000 times, and 36,000 times at 257°. A volume of ice is made fluid by as much heat as will raise an equal volume of water 140°. Vegetables decompose it, the hydrogen forming their unctuous, resinous, and saccharine principles, in combination with the carbon of the soil; the oxygen being evolved by the leaves, and a supply thereby kept up of what is fixed by animal respiration and combustion. In the ocean it is combined with one thirtieth of its weight of muriate of soda, or sea-salt; but as the salt does not crystallize so soon as water, sea-water remains liquid till the thermometer is 3·5° lower than for other water. In like manner, the salt does not evaporate at the heat which vaporises water, and therefore the two processes of crystallizing and evaporating separate the water from the salt. Hence, the clouds which rise from the sea rain fresh water, and water evaporated by art yields salt in the proportion of one ton from thirty-five of water. In crystallizing, vacuities arise, which enlarge the bulk; hence frozen water splits rocks and trees, and ice floats upon water. Water combines with iron, sulphur, lime, and various substances, under a great variety of names; hard water arises from carbonic acid in water, which then combines with lime. Waters are called hard when they contain a salt which decomposes the soap, instead of dissolving it. The deductions drawn in regard to the decomposition of water from the experiment of discharging a galvanic battery through water, are by some considered erroneous.

WATER (among Lapidaries.) The lustre of precious stones.

WATER (among Manufacturers.) A lustre imitating waves, set on silks, mohair, &c.

WATER (among Farriers.) A filthy humour issuing from a wound in a horse.

WATER-BAILIFF (in English Law.) An officer in seaport towns who searches ships, and in London has particular charge of the fish brought to market.

WATER-COLOURS. Colours made of water instead of oil. The principal of the water-colours are as follow: White—ceruse, white lead, Spanish white, flake white, spodium: Black—burnt cherry stones, ivory black, lamp black: Green—green bice, green verditer, grass green, sap green, verdigrise distilled: Blue—Sanders blue, terre blue, blue verditer, indigo litmus, smalt, Prussian blue, light blue, ultramarine, blue bice: Brown—Spanish brown, Spanish liquorice, umber, bistre, terra de Sienna burnt and unburnt: Red—native cinnabar, burnt ochre, Indian red, red lead, minium, lake, vermilion, carmine, red ink, Indian lake: Yellow—English ochre, gall stones, gamboge, masticot, ochre de luce, orpiment, Roman ochre, Dutch pink, saffron water, king's yellow, gold yellow, French berries.

WATER-COURSE. Any natural or artificial stream of water, as a river, a canal, and the like.

WATER-HEN. A bird found in Europe, which builds its nest upon low trees and shrubs; it both swims and wades, and the young ones imitate their parents in both these practices the moment they are out of the shell.

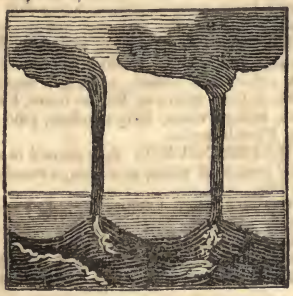
WATER-LEVEL. A kind of level used in agriculture for finding the level of roads or grounds by means of a surface of water or other fluid, founded on the principle that water always finds its own level. It consists of

a long wooden trough, as represented above, which, being filled with water, shows the line of level.

WATERMAN. One who plies with a boat upon a river.

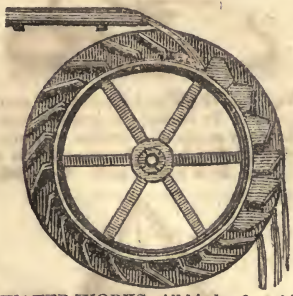
WATER-MARK. The mark visible in paper, which is made in the manufacturing of it.

WATER-SPOUT. An aqueous meteor, most frequently observed at sea, rising at first in the form of a small cloud, which afterwards enlarges, and assumes the shape of a cylinder or cone. It frequently proves destructive to vessels, &c.



WATER-MILL. A mill that is put in motion by means of water.

WATER-WHEEL, OVERSHOT. A wheel which, by water falling on its upper periphery, is carried round, not only by its force, but by its accumulated weight; for it is so constructed as to catch and hold the water in descending, part with it at the bottom, and ascend on the other side empty. It is a very convenient and powerful structure when the nature of the ground permits its use.



WATER-WORKS. All kinds of machines employed in raising or sustaining water, as water-mills, sluices, aqueducts, and the like.

WATTLE. A kind of hurdle used in making sheepfolds.

WATTLES. Fleshy appendages at the sides of the lower mandibles in some birds.

WAX. A soft, yellowish, and tenacious matter, wherewith the bees form cells for the reception of the honey. The upper surface of the leaves of many trees is covered with a varnish which may be separated and obtained in a state of purity, and found to possess all the properties of bees-wax; hence it is justly inferred, that wax is a vegetable product, and that the bees extract it unaltered from the leaves of trees and other vegetable substances that contain it. Several plants contain wax in such abundance as to make it profitable to extract it from them.

WAX-CHANDLER. One who makes candles of wax.

WAY. A road, as the highway.

WAY (among Seamen.) The ship's course.

WAYS AND MEANS. The supplies for meeting the public expenditure of the year, voted by parliament in Great Britain, and by congress in the United States.

WEAR, or WEIR. A dam made to stop water.

WEASEL. A genus of animals of which there are 45 species: as the ichneumon, which in Egypt kills rats and snakes; the civet cat, which secretes a favourite perfume at the rate of a drachm a day; the marten and the sable, valued for their fur, particularly the latter; the pole-cat, an enemy to poultry; the ferret, a ferocious creature, which kills every thing to suck its blood; and the common weasel, which lives in the roots of trees, and devours mice, insects, and birds.

WEATHER-GLASSES. Instruments contrived to show the state of the atmosphere, as barometers, thermometers, &c.

WEAVING. A manual operation, by which men form threads of flax, wool, cotton, and silk, into cloth, stockings, carpets, and other articles of dress and furniture. It is effected in a general way, by lines or threads, called a warp, and by a contrivance for lifting some of the threads, and passing a shuttle or needle between them, with a cross thread, till the whole of the warp is thus crossed, or interwoven. Different kinds of weaving are effected by sundry variations in the structure of the frame, and many are highly curious and complicated. Nature weaves by a different process, the very smallest invisible atoms uniting by fitting forms, till they form large and visible ones. Weaving is an art of great antiquity, and gives employment in all nations to a large portion of the population. It is now done principally by machinery.

WEDGE. One of the mechanical powers, founded on the principle of the inclined plane, a wedge being a double of that power. Its effect is to diminish motion, and gain power in the proportion of the length of the side to half the thickness, the power moving through the length, while the weight moves through half the thickness. For purposes where force of percussion can be applied, it is very powerful and convenient.

WEDNESDAY. The fourth day of the week, so called from Woden, a Gothic monarch.

WEEK. A division comprising seven days. Fifty-two weeks make the year.

WEEPERS. Pieces of white cambric, crape, or muslin, sewed upon the sleeves in deep mourning.

WEIGHT (in Physics.) A quality in natural bodies, by which they tend towards the centre of the earth. Weight may be distinguished into absolute, specific, and relative. It is demonstrated by Sir Isaac Newton, 1. That the weights of all bodies at equal distances from the centre of the earth, are proportional to the quantities of matter that each contains. 2. On different parts at the earth's surface, the weight of the same body is different, owing to the spheroidal figure of the earth, which causes the bodies on the surface to be nearer the centre in going from the equator towards the poles; and the increase of weight is nearly in proportion to the square of the sine of the latitude; the weight at the equator to that at the pole being as 229 : 230, or the whole increase of weight from the equator to the pole is the 229th part of the former. 3. That the weights of the same body, at different distances above the earth, are inversely as the squares of the distances from the centre. So that a body at the distance of the moon, which is 60 semidiameters from the earth's centre, would weigh only one thirty-six thousandth part of what it weighs at the surface of the earth. 4. That at different distances within the earth, or below the surface, the weights of the same body are directly as the distances from the earth's centre; so that half way toward the centre of a body it would weigh but half as much, and at the centre it would weigh nothing at all. 5. A body immersed in a fluid, which is specifically lighter than itself, loses so much of its weight as is equal to the weight of a quantity of the fluid of the same bulk with itself. Hence a body loses more of its weight in a heavier fluid than in a lighter one, and, therefore, it weighs more in a lighter fluid than in a heavier one.

A gallon of oil weighs 7½ lbs.
A cubic foot of water 1000 oz.
A pint of water 16 oz.

WEIGHT (in Commerce.) Any body of a known weight that is made the measure of weighing other bodies. Two sorts of weights are admitted in England and the United States, namely, Troy weight and avoirdupois weight.

WELD. An herb, the stalk and root of which are used in dying bright yellow and lemon colours.

WELDING. Working two pieces of iron together by means of heat, until they form one mass.

WELL. A hole dug in the ground, of sufficient depth to admit the water to spring up. When the water is raised by means of a line and a bucket, it is a well properly so called, but when the water is raised by means of a pump, it is called a pump.

WEST. One of the four cardinal points of the horizon, at which the sun sets.

WHALE. A huge animal that inhabits the Arctic seas, and is said to measure sometimes from 50 to 75 feet. The blubber, which lies under the skin of the whale, contains the oil, which is an article of commerce, and the horny laminæ in the upper jaw yield what is called whalebone. Its mouth is capable of containing a ship's jolly boat, filled with men. The eyes are about the size of those of an ox, and are situate in the sides of the head. A good sized whale yields about sixty barrels of oil. The spermaceti whale is somewhat different from the one here described, and yields less oil; it is, however, of a better quality, and commands a higher price.

WHARF, or QUAY. A structure raised on the shore of a road or harbour.

WHEAT. A valuable grain, the nutritive quality of which arises from the quantity of gluten, or glue-like substance, which it contains. Its flour, mixed with water, and excited by yest, ferments, and baked in an oven constitutes bread, a wholesome food. The cut represents a wheat sheaf as set up and tied together after reaping; it is then lodged in a

barn, thrashed, winnowed, and the grain ground into flour.

WHEEL. One of the most important of the six mechanical powers, which is employed in the structure of almost every machine.

WHIG. The name of a political party in England, whose association renders them formidable to the sovereign, while their liberal professions give them some interest with the people. As a party, they are opposed to the Tories, who sustain the royal prerogatives.

WHIRLPOOL. An eddy or vortex.

WHIRLWIND. An exceedingly rapid and impetuous wind, that rises with a whirling motion, and continues in the same way for some time.

WHISPERING GALLERIES. Places which, like the gallery in St. Paul's Cathedral, London, by their peculiar construction enable any one who whispers on the wall on the one side to be heard by a person standing on the opposite side.

WHIST. A favourite, and often ruinous, game at cards, played by four, in which the the good and bad cards average in a certain number of deals.

WHITE. A colour supposed by Newton to be a composition of all the other colours.

WHITE LEAD. The rust of lead.

WHITE WASHING. The act of cleansing ceilings and walls, with a solution of lime in water, to which a little size is occasionally added. The practice of white-washing apartments eminently contributes to the preservation of health. In countries abounding with lime, the expense is trifling. It ought to be remarked, however, that hot or quick-lime is preferable to any other, and must be employed as soon as possible after it is slaked; for, by attending to this circumstance, its effects, in destroying vermin and removing infection, will be considerably increased.

WHITING. A fish of the cod tribe.

WHITSUNDAY. A festival in the Christian church, that falls on the fiftieth day after Easter.

WHITTLE. A woollen shawl.

WICKLIFFITES. The followers of John Wickliffe, who first opposed the see of Rome, and prepared the way for the Reformation in England.

WIDGEON. A bird of the duck tribe.

WIGWAM. An Indian hut.

WILD MAN. A species of the monkey in the East and West Indies, that approaches the nearest to man in his form and actions.

WILD PIGEON. This bird is found in great numbers in almost every part of America. In many places they collect in such vast companies as to break the branches of the trees by their weight. In the state of Kentucky there was a breeding place, some years since, which occupied the forests for several miles in width, and about forty miles in length.

WILL. The solemn act by which a man declares his will as to the disposal of his estate after his death. If by word of mouth, it is a nuncupative will; but if by written deed, it is a testament.

WIND. The current or stream of air, produced by the rarefaction from the solar heat, by which the lower stratum arises, and the surrounding atmosphere rushes in to supply its place. These currents being often deflected by mountains and crossed by other currents: the different degrees of rarefaction by day, and condensation by night, ascent, and horizontal motion, keep the air in a state of constant activity. The rare superior parts appear, however, to be more sensible than the lower stratum, because balloons have been carried 60 miles an hour, at the height of two

miles, while the moderate wind below has not moved more than 15 miles. In England and the United States westerly winds prevail over easterly in the proportion of 225 to 140.

WINDBOUND. An epithet for a ship that cannot leave the port on account of unfavourable winds.

WINDLASS. A common mechanical power, by which weights are raised, and water generally drawn out of a well. As power is as velocity, and as the winch makes a larger circle than the cylinder, round which the rope coils, so the power is proportionally increased. Thus, if the winch performs a circle of six feet, while the cylinder performs but one foot, so the power of the winch, friction excepted, is increased six times.

WINDMILL. A mill that is put in motion by means of the wind acting on the sails, as in the subjoined figure.

WINDPIPE, or TRACHEA. A tube composed of cartilaginous rings through which the air passes to the lungs.

WINDWARD. Towards the wind.

WINE. The fermented juice of the grape, which is found to contain an acid, alcohol, tartar, aroma, and colouring matter.

WINGS. The right and left divisions of an army.

WINGS (in Fortification.) The large projecting sides of hornwork.

WINNOWING. Separating corn from the chaff by the help of the wind.

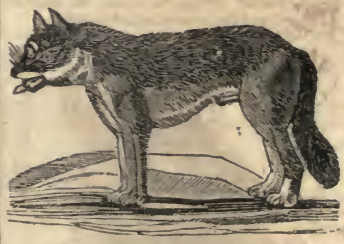
WINTER. That season of the year when, in the northern hemisphere, the sun is in the tropic of Capricorn, or in his greatest declination from the equator.

WIRE. A piece of metal drawn out to the size of a thread, or even smaller, according to the size of the hole which it is made to pass through. One single grain of gold admits of being drawn out into a wire 98 yards long.

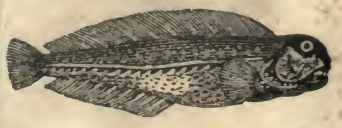
WIT. A faculty of the mind, consisting, according to Mr. Locke, in the assembling and putting together of those ideas with quickness and variety, in which any resemblance or congruity can be found, in order to form pleasant pictures and agreeable visions to the fancy. This faculty, the same author observes, is just the contrary of judgment, which consists in the separating carefully from one another, such ideas wherein can be found the least difference, thereby to avoid being misled, by similitude and affinity, from taking one thing for another.

WITNESS (in Law.) One sworn to give evidence in a cause.

WOLF. An animal nearly allied to the dog tribe, about two and a half feet in height, and three and a half in length. The form of the animal is thin, and he has a gaunt, emaciated look. His tail is generally nearly straight. In appearance the wolf somewhat resembles a Newfoundland dog. He has, however, a fiercer and more savage aspect. The colour of the common wolf is gray; a species of black wolf is common in North America; and Captain Franklin mentions seeing white wolves in his voyage to the polar seas. The wolf is common in Europe and America. He preys on sheep, deer, &c. and when pressed by hunger will even attack men.



WOLF-FISH. A fierce, voracious fish, of the northern seas.



WOAD. A plant growing in France and on the coast of the Baltic, from which a blue dye of the same name is extracted.

WOODCOCK. A bird about as large as a quail, which has a bill three inches long. During the day, it remains in the woods and thickets, and at the approach of evening seeks open marshy places to feed in. The flesh of the woodcock is reckoned very delicious, and no game is more prized by sportsmen. The woodcock of the United States is much smaller than that of Europe.

WOODCUTTER. An artist who cuts figures and letters in wood, to serve the purpose of engraving on copper. This art has been carried to very great perfection, and in many respects will be found to effect the purpose quite as well as the sister art of copper-plate engraving.

WOODPECKER. A bird, so called because it pecks holes in the bark of trees. It makes its nest, by digging with its beak into the trunk or limb of some decayed tree, forming a circular cavity, in which its eggs are deposited and the young ones hatched.

WOOL. The covering of sheep, which is an important article of commerce. Much attention, therefore, is paid to the breed, and also to the feeding of sheep, to render their wool as perfect as possible.

WOOLPACK. Literally, a pack of wool; a name for the seat of the Lord Chancellor in the English House of Lords.

WOOLSTAPLER. One who deals in wool, and collects it for the manufacturer.

WORD. An articulate sound that represents some idea to the mind; in Military Affairs, a watchword, or peculiar word that serves as a token or mark for all sentinels to detect spies or other persons who may wish to intrude into a camp.

WORM. A long winding pewter pipe, passing through a tub of cold water to cool and thicken the vapours in the distillation of liquors.

WORM (in Gunnery.) The instrument used for drawing the charge out of a gun.

WRECK. The ruins of a ship which has been stranded, or dashed to pieces on a shelf, rock, or lee shore, by tempestuous weather, or by accident.

WREN. A small singing bird found in almost all parts of the world, about hedges or farm yards. It is very small in size, and is much admired for the loudness of its note, compared with the size of its body.

WRIT (in Law.) A summons to appear; called a subpœna, when it requires witnesses to appear; a latitat, when it is assumed the party is concealed; of habeas corpus, when it is to bring up the body; of præmunire, when it incurs forfeiture of all property; and of qui tam, when to recover a fine, of which the prosecutor is to have a share.

X.

X, the twenty-second letter of the alphabet, stands as a numeral for 10; and with a line over it thus, $\overline{X}$, it stood formerly for 10,000.

XANTHOXYLON, PRICKLY YELLOW WOOD, or YELLOW HERCULES. A native of Jamaica, and other tropical countries, where it grows to the height of 16 feet, and is about 12 inches in diameter.

XEBEC. A small three-masted vessel navigated in the Mediterranean Sea, and distinguished from other European vessels by the great projection of the prow and stern beyond the cut-water and stern-post respectively. The sails are in general similar to those of a polacre, but the hull is different.

Y.

Y, the twenty-third letter of the alphabet, stood as a numeral for 150; and with a line over it thus, $\overline{Y}$, for 150,000.

YACHT. A small ship with one deck, carrying four, eight, or twelve guns, and thirty or forty men. They are in general employed as vessels of state.

YAM. A large, esculent root, growing in tropical climates, similar in taste to the potato, and much esteemed by the natives as an article of food.

YARD. A long measure containing three feet.

YARD (in Shipbuilding.) A long piece of timber suspended upon the masts of a ship to extend the sails to the wind.

YARD-ARM. That half of the yard that is on either side of the mast when it lies athwart the ship.

YARN. Wool or flax spun into thread, of which cloth is made; or, in a nautical sense, it signifies one of the threads of which ropes are composed.

YAWNING. An involuntary opening of the mouth, which is occasioned by weariness or an inclination to sleep, though it frequently occurs early in the morning, and immediately after rising. Yawning is sometimes the forerunner of convulsions or ague-fits, in which cases, those distressing affections might often be prevented, by adopting timely and proper remedies.

YEAR. The relative period in which the earth performs its revolution round the sun, which, from star to star, is 365 days 6 hours 9 minutes and 17 seconds, but with reference to the sun's centre, is 365 days 5 hours 48 minutes and 48 seconds, or 31,556,928 seconds; of which the halves are unequal, owing to the orbit being larger on the aphelion side, where the earth moves slower than on the perihelion side. The time from the spring equinox to the autumnal is 186 days 11 hours 20 minutes; and from the autumnal to the spring but 178 days 18 hours 29 minutes.

YEOMAN. A master-farmer, or country householder.

YEOMAN OF THE GUARD. A certain description of foot guards, in England, a hundred in number, who always attend immediately on the person of the king.

YEST. The viscid bubbles and excrement of fermented beer, rising to the surface with the carbonic acid which escapes during fermentation.

YEW-TREE. A tree which is a native of Britain and most other countries of Europe, as also of North America. It is an evergreen, and remarkable for the hardness of its wood.

YUNX (in Natural History.) A genus of birds of the order Picæ, of which there is only a single species. It is allied to the woodpecker in some respects, and in others to the cuckoo. It makes no nest, but lays eight or ten eggs on the bare wood in hollow trees.

Z.

Z, the twenty-fourth letter of the alphabet, formerly stood as an abbreviation for an ounce and other weights.

ZAFFRE. The oxide of cobalt, employed for painting pottery of a blue colour.

ZEBRA. An African animal, of the horse tribe, about the size of a mule. It is beautiful, swift, wild, and vicious. Its colour is white, with regular stripes of black.

ZENITH. An Arabic word, used in astronomy to denote the vertical point of the heavens, or that point directly over our heads. The zenith is called the pole of the horizon, being 90° distant from every point of that circle.

ZEOLITE. A mineral stone, sometimes found amorphous and crystallized.

ZERO. The cipher (0).

ZINC. A metal of a bluish white colour, somewhat brighter than lead, possessing but little either of malleability or ductility. Specific gravity, 7.190.

ZODIAC. An imaginary belt in the heavens, in the middle of which is the ecliptic or sun's path. It has also twelve constellations within its space, which are called the twelve signs of the zodiac.

ZONE. A division of the earth's surface, of which there are five in number, distinguished according to the degree of heat to which each part is exposed, into two temperate, two frigid, and one torrid zone.

ZOOLOGY. That branch of natural history which treats of animals. That which treats of quadrupeds is also called by the general name of zoology, to distinguish it from ornithology, which treats of birds; ichthyology, which treats of fishes; entomology, which treats of insects; helminthology, which treats of worms; erptology, which treats of creeping things.

General zoology comprehends the whole animal kingdom, as this class of natural objects is styled by Linnæus. It is divided into six classes; these classes are subdivided into orders, and the orders into genera, and the genera into species.

The first class, Mammalia, comprehends seven orders, namely, the primates, bruta, feræ, glires, pecora, belluinæ, and cete. Under the Primates are four genera, namely, homo, man; simia, the ape, baboon, and monkey; lemur, the lemur; vespertilio, the bat. Of the Bruta there are the following genera, namely, bradypus, the sloth; myrmecophaga, the ant-eater; dasypus, the armadillo; rhinoceros, the rhinoceros; sokotyro; elephas, the elephant; trichechus, the morse and walrus, and the manis. The Feræ consist of ten genera, namely, phoca, the seal; canis, the dog, the wolf, the fox, and the hyæna; felis, the lion, tiger, leopard, tiger-cat, the lynx, and the cat; viverra, the weasel, the shank, the civet, the genet, and the fitchet; mustela, the otter, the marten, the ferret, the polecat, the ermine, and the stoat; ursus, the bear, the badger, the raccoon, and the glutton; didelphis, the opossum, the marmose, the phalanger, and the kangaroo; talpa, the mole; sorex, the shrew; erinaceus, the hedgehog. The Glires consist of histrix, the porcupine; cavia, the cavy; castor, the beaver; mus, the rat, muskrat, and the mouse; arctomys, the marmot; sciurus, the squirrel; myoxus, the dormouse; dipus, the jerboa; lepus, the hare and the rabbit; and the hyrax. The Pecora consist of camelus, the camel and the llama; moschus, the musk; cervus, the stag, the deer, the moose or elk; camelopardalis, the cameleopard or giraffe; antilopus, the antelope; capra, the goat; ovis, the sheep; and bos, the ox. The Belluinæ consist of equus, the horse, the ass, and the mule; hippopotamus, the river-horse; tapir, the tapir; and sus, the hog. The Cetæ consist of monodon, the monodon; balæna, the whale; physeter, the cachelot; delphinus, the porpoise, the dolphin, and the grampus.

The second class, Aves, is divided into six orders, namely, accipitres, picæ, anseres, grallæ, gallinæ, and passeres. The Accipitres consist of four genera, namely, vultur, the vulture and the condor; falco, the eagle, the kite, the buzzard, the falcon, and the hawk; strix, the owl; lanius, the shrike, the butcher-bird, and the woodchat. The Picæ consist of the following genera, namely, ramphastos, the toucan; momotus, the motmot; psittacus, the parrot, the macaw, the parroquet, the cockatoo, and the lory; buceros, the hornbill; crotophaga, the ani; glaucopis, the wattle-bird; corvus, the crow, the rook, the raven, the jackdaw, and the jay; coracoas, the roller; oriolus, the oriole; gracula, the grackle; paradisea, the bird of paradise; buceo, the barbet; trogon, the curucui; cuculus, the cuckoo; yurex, the wryneck; picus, the woodpecker; sitta, the nuthatch; todus, the toddy; alcedo, the kingfisher; galbula, the jacama; merops,

the bee-eater; upupa, the hoopoe; certhia, the creeper; trochilus, the humming-bird; buphaga; and scythrops. The Anseres consist of anus, the swan, the goose, the duck, the shoveler, and the teal; mergus, the merganser, the goosander, the dunn-diver, and the smew; alca, the auk or razorbill; apterodytes, the penguin; procellaria, the petrel; diomedea, the albatross or man-of-war bird; pelicanus, the pelican; the cormorant, the shag, the crane, the gennet, and the booby; plotus, the darter; phaeten, the tropic bird; colymbus, the guillemot, the diver, and the grebe; larus, the gull, and the tarrock or kittiwake; sterna, the tern; rynchops, the skimmer. The Grallæ consist of the phoenicopteros, the flamingo; platalea, the spoonbill; palamedea the screamer; mycteria, the jabira; cancroma, the boatbill; scopus, the umbre; ardea, the heron, the crane, the stork, and the bittern; tantalus, the ibis; corrira, the courier; scolopax, the curlew, the whintril, the snipe, the woodcock, the godwit, and the red-shank; tringa, the sandpiper, the phalarop, and the purre; charadrius, the plover and the dotterel; recurvirostra, the avocet; hæmatopus, the sea-pie or pied oyster, and the catcher; glarcola, the pratincole; fulica, the gallinule, the moorhen, and the coot; vaginalis, the sheath-bill; parra, the jacama; rallus, the rail, the crake or land-rail, the brook-ouzel or water-rail, and the soree; psophia, the trumpeter. The Gallinæ consist of the olis, the bustard; struthio, the ostrich, and the cassowary or emeu; didus, the dodo; pavo, the peacock; meleagris, the turkey; penelope, the guam and the yacow; crux, the curassow; phasianus, the pheasant; numidia, the pintado or guinea-hen; tetrao, the grouse, the moorcock, the partridge, the quail, and the tinamon. The Passeres consist of columba, the pigeon, the ring-dove, the turtle-dove, &c.; alauda, the lark; sturnus, the stare or starling, and the crake or water-ouzel; turdus, the thrush, the fieldfare, the blackbird, and the ring-ouzel; ampelis, the chatterer; colins, the coly; loxia, the grossbeak, the crossbill, and the hawfinch; emberiza, the bunting; tanagra, the tanager; fringilla, the finch, the chaffinch, the siskin, the redpole, the linnet, the twite, and the sparrow; phytotoma, the phytotoma; muscicapa, the fly-catcher; motacilla, the wagtail or warbler, the nightingale, the hedge-sparrow, the wren, the white-throat, the wheat-ear, and the red-start; pipra, the minnakin; parus, the titmouse; hirundo, the swallow and the swift; caprimulgus, the goatsucker.

Amphibia, the third class, is divided into two orders, namely reptilia, reptiles; and serpentes, serpents. The Reptilia consist of the following genera, namely, testudo, the tortoise and the turtle; rana, the toad, the frog, and the natterjack; draco, the flying dragon; lacerta, the crocodile, the alligator, the lizard, the guana, the newt, the salamander, the chameleon, and the eft; syren, the syren. The Serpentes consist of crotelus, the rattle-snake; boa, the boa constrictor; coluber, the viper and the asp; anguis, the snake and the blind-worm; achrocordus, the warled snake; the amphisbœna; and cæcilia.

Pisces, the fourth class, is divided into six orders, namely, apodal, jugular, thoracic, abdominal, branchiostegous, chondropterigious. The Apodal order contains the following genera, namely, muræna, the eel; anarhicas, the wolf-fish; xiphias, the sword-fish; ammodytes, the launce; gymnotus, ophidium; stromateus; stylephorus, &c. The Jugular order contains the following genera, namely, callionymus, the dragonet; trachinus, the sting-bull or weaver; gadus, the cod-fish, bib, whiting, coal-fish, hake, barbot, and rockling; blennius, the blenny, &c. The Thoracic order contains the following genera: echineis, the sucking-fish; gobius, the goby; coltus, the bull-head, father-lasher, and miller's-thumb; zeus, the john-doree; pleuronectes, the flounder, plaice, dab, sole, smeardab, pearl, and turbot; sparus, the gilthead and the pudding-fish; labrus, the wrasse, goldfinny, the camber, and the cook; perca, the perch, basse, luffe, black-fish, and squirrel-fish; scomber, the mackerel, thunny, scad, and yellow-tail; trigla, the gurnard, piper, tubfish, &c. The Abdominal order contains the following genera, namely, cobitis, the loche and the mud-fish; salmo, the salmon, trout, salmon-trout, bull-trout, charr, smelt, gurniard, and lavaret; fistularia, the tobaccopipe-fish; esox, the pike and gar-fish; mugel, the mullet; exocoetus, the flying-fish; clupea, the herring, pilchard, sprat, shad, and anchovy; cyprinus, the carp, barbel, gudgeon, tench, gold-fish, dace, roach, bleak, bream, minnow, graining, &c. The Branchiostegous order contains the following genera: tetrodon, the sun-fish; syngnatus, the pipe-fish and needle-fish; lophius, the fishing-frog, and angler or frog-fish, &c. The Chondropterigious order contains the following genera, namely, accipenser, the sturgeon; chimæra, the sea-monster; squalus, the shark, dog-fish, tope, sea-fox, and angel-fish; pristis, the saw-fish; raia, the ray, skate, thornback; petromyzon, the lamprey and the pride; gastrobanchus, the hag or hag-fish.

Insecta, the fifth class, is divided into seven orders, namely, coleoptera, hemiptera, lepidoptera, neuroptera, hymenoptera, diptera, and aptera. The order Coleoptera contains the following genera, namely, scarabæus, the beetle; dermestes, the leather-eater; ptinus, the death-watch; forficula, the earwig; lampyris, the fire-fly; hydrophilus, the water-clock, &c. The order Hemiptera contains blatta, the cockroach; gryllus, the locust, grasshopper, and cricket; fulgora, the lantern-fly; notonecta, the boat-fly; nepa, the water-scorpion; cimex, the bug; aphis, the plant-louse; coccus, the cochineal, &c. The order Lepidoptera contains papilio, the butterfly; sphinx, the hawk-moth; phalæna, the moth. The order Neu-

roptera contains libellula, the dragon-fly; ephemera, the day-fly; myrmeleon, the lion-ant, &c. The order Hymenoptera contains cynips, the gall-fly; teuthredo, the saw-fly; sirex, the tailed wasp; ichneumon, the ichneumon; chrysis, the golden-fly; vespa, the wasp; apis, the bee; formica, the ant or emmet, &c. The order Diptera contains ostrus, the gad-fly and breeze; tipula, the crane-fly; musca, the fly; culex, the gnat; bombylius, the humble-bee, &c. The order Aptera contains podura, the spring-tail; termes, the white ant; pediculus, the louse and crab-louse; acarus, the tick, harvest-bug, and itch-mite; aranea, the spider, scorpio, the scorpion; cancer, the crab, lobster, prawn, shrimp, and squill; pulex, the flea, &c.

The sixth class, Vermes, is divided into five orders, namely, intestina, mollusca, testacea, zoophytes, and infusoria. The order Intestina contains the following genera, namely, fasciola, the gourd-worm or fluke; tænia, the tape-worm; godius, the hair-worm; lumbricus, the earth-worm, the dew-worm, and the lug; hirsudo, the leech; and sipunculus, the tube-worm, &c. The order Mollusca contains laplisia, the sea-hare; doris, the sea-lemon; actinia, the sea-daisy, sea-marigold, and sea-carnation; sepia, the cuttle-fish; asterias, the star-fish and sea-star; echinus, the sea-urchin, &c. The order Testacea contains lepas, the acorn-shell; arca, the ark; conus, the cone; turbo, the wreath; helix, the snail; haliotis, the sea-ear; dentalium, the tooth-shell; ostrea, the oyster; cardium, the cockle; mytilus, the mussel; argonauta, the sailor; buccinum, the whelk, &c. The order Zoophytes contains spongia, the sponge; isis, the coral; hydra, the polype; tubipora, the tubipore, &c. The order Infusoria contains the genera vorticella, monas, volvox, gonium, &c.

ZOOPHYTES. An order of animals in the Linnæan system, under the class Vermes, comprehending such as hold a medium between animals and vegetables. Most of the zoophytes, like plants, take root and grow up into stems; but they differ from plants inasmuch as they are furnished with sensation and spontaneous motion. Zoophytes are without the animal characteristics of blood-vessels, vertebræ, spinal marrow, and connecting muscles and limbs for locomotion. The animal and vegetable running into each by imperceptible distinctions, just like the vegetable and mineral, the three kingdoms of nature have, in their approximating genera, no broad marks of discrimination, but run one into another by nice gradations of varied, added, and subtracted powers. There are four classes of zoophytes: 1. resembling shells; 2. resembling mother-of-pearl; 3. resembling crusts; and, 4. resembling horn.

QUESTIONS

RELATING TO THE PRINCIPAL ARTICLES

IN THE

DICTIONARY OF USEFUL KNOWLEDGE.

[The following questions form a valuable auxiliary in the study of the work to which they are appended. They will save the teacher the necessity of pointing out to the pupil the more important articles for his consideration, and they will intimate to the latter the particulars most necessary to be understood, and to which his instructer will turn his attention most especially.]

A.

What is the first letter of the Alphabet, and its principal uses?
What is an Abbey?
What is Aberration?
What is the Aberration of the Sun?
What is Ablution?
What are the primitive inhabitants of a country called?
What is Absolution?
What is Absorption of the earth?
How are Abyssinian cattle described?
What is an Academy?
What is accelerated Motion?
According to what law is acceleration of motion increased?
What, in the science of Ornithology, is the first order of birds?
What is Acclamation?
How are Acids described?
What are the characteristic properties of Acids?
What is Action, (in Physics,) and what is the principal law of Action?
What is Adhesion?
What is Cohesion?
What is an Adjutant?
What officer of the British navy is the highest in command?
What is the title of an officer of the highest rank in the United States navy?
What is the festival called Advent?
What is Adulteration?
What is signified by the word Era?
What are the most remarkable Eras?
What are Aerolites?
What is Aerostation?
Did the ancients make any attempts to fly?
What modern chymist suggested the invention of the Balloon?
Who made the first experiment in England?
What success attended the experiment of the Balloon in France?
Who first ascended in a Balloon, and what was the result of his attempts?
How did Roberts and Charles further illustrate the science of Aerostation?
What fatal accident occurred to Messrs. Pilatre and Romaine?
What success attended the first trial of a Balloon in England?
Who made the second aerial voyage in England?
What is Affinity in Chymistry?
What is Agate?
What is signified by the word *Age* in Chronology?
What are the principal *historical* ages?
What are the *poetic* ages?
What is Agriculture?
Did the antediluvians practise Agriculture?
What nation of antiquity excelled in agriculture?
Were the Greeks acquainted with agriculture, and do their poets and historians commend this useful art?
How was agriculture regarded by the Jews—the Carthaginians—the Romans?
What animal, and what implements were used in the ancient Agriculture?
What was the state of Agriculture during the middle ages, and what is its present state?
How may Air and its properties be described?
What is an Air-pump?
What is Albumen?
What is Alcohol?
What is Algebra?
What are the Algebraic characters?
In what country is Algebra supposed to have originated, and by whom was it introduced into Europe?
What is Alkali?
What is Allegiance?
What is an Allegory?
To what class of animals does the Alligator belong?
What is Alloy?
How is the Pimento Tree described?
What is an Almanac?
Who constructed the first Nautical Almanac?

What is an Alphabet?
Are the Alphabets of all nations alike?
Have the Chinese any Alphabet?
What is Altitude?
How are accessible Altitudes measured?
How are inaccessible altitudes measured?
What is the altitude of a star?
What is Alum?
What is an Amalgam?
What is Amber?
What is signified by the word Amen?
What is Amercement?
What is Ammonia, and what are its principal uses?
How are Amphibia defined?
What was the institution of the Amphyctions?
What is an Amphitheatre?
What is Amplification?
What is an Amulet?
What is Anachronism?
What is Analogy?
What is Analysis?
What science is Anatomy, and what are its applications?
What is Comparative Anatomy?
Were the Greeks acquainted with Anatomy?
By whom were the Romans instructed in Anatomy?
Was practical anatomy permitted among the Arabs?
Have the Italians advanced the study of anatomy?
What discovery was made by Harvey?
Who have been the most eminent anatomists of modern times?
What are the uses of the Anchor?
Who are signified by the Ancients?
What are Androides?
What is an Animal?
What are Animal flowers?
What are Animalcules?
Do oils and ardent spirits exhibit Animalcules?
Does rain water contain Animalcules?
What are the six classes into which animals are divided?
What is signified by the term Antarctic?
What is an Antelope?
What are the Antennæ of insects?
Who are Antipodes?
What is the distinguishing character of the white Ants?
What is the highest order of the class *Simia*, in Zoology?
What is an Apiary?
Who are Apostles?
What is Apotheosis?
What is understood by Apprehension?
What is Approximation?
What is an Aqueduct?
How is Arabia described?
What are Arabic characters?
What is an Arch?
What is the chief dignitary of the English church?
Was Archery ever encouraged in Britain?
What was the difference between *archers* and *cross-bowmen?*
What is Architecture, and how is that science divided?
Were commodious habitations constructed in the first ages of the world?
What monuments remain which exhibit the skill of the Egyptians in Architecture?
Do any Persian and Babylonish ruins resemble those of Egypt?
How does Vetruvius describe the origin and progress of Architecture?
In what manner did the Greeks improve upon the ancient Architecture?
What was the origin of the Doric order—of the Ionic—of the Corinthian—of the Tuscan—of the Composite?
What is the Caryatic order?
Underwhat emperor was Architecture brought to the highest perfection at Rome?
What was the Architecture of the *middle ages?*
What are the distinctive characters of the Saxon, Gothic, and Norman styles?
What are the principal features of the modern Gothic, and what are some remarkable specimens of it?
What is the history of Modern Architecture?
What are the Arctic and Antarctic circles?
What is Arithmetic, and how is it divided?
What is Arsenic?
How is the term Art defined?
What is an Artery?
What is Artillery?
Are the Arundelian Marbles important records of ancient history?
Is Asbestos combustible?
What serpent of Egypt is remarkable?
By what mode are metals separated from their combination with other substances?
Was Astrology a true science?
What science describes the heavenly bodies?
What account does Josephus give of the origin of Astronomy?
What theories did the Chaldeans form concerning the system of the universe?
Did the Egyptians cultivate Astronomy?
What knowledge of Astronomy was possessed by the Indians and the Chinese?
From whom did the Greeks receive their first knowledge of Astronomy, and who were their most distinguished *astronomers?*
What were the theories of Pythagoras—of Philolaus—of Hicetus—of Meton, and Euctemon?
Who was the inventor of the *armillary sphere?*
What were principal inventions and discoveries of Archimedes, and of Hipparchus?
What was the Ptolemaic system?
How did the Arabians advance the science of Astronomy?
What was the progress of astronomy in the thirteenth century?
After whom did Copernicus appear, and what was his system?
Who opposed the Copernican system?
What were the discoveries of Kepler?
Who were the eminent astronomers of the seventeenth century, and how was Galileo treated in consequence of his doctrines?
What instrument did Galileo invent, and what use did he make of it?
Who is the most distinguished of modern astronomers, and what are his principal discoveries?
What were the services of Mr. Flamstead and Dr. Halley to the science of astronomy?
By what experiment was the earth demonstrated to be an oblate spheroid?

How was Astronomy advanced in the eighteenth century, and how in the nineteenth?
What new planets have been discovered in the nineteenth century?
Who (in Mythology) was Atlas?
What is the Atmosphere?
Is the *pressure of the Atmosphere* always the same?
By what rule is the *density of the atmosphere* supposed to diminish?
How is the *temperature of the atmosphere* regulated?
What is an Atom, and what is the *atomical philosophy*?
What is the Atomic theory in chymistry?
What is Attraction, and how is it distinguished?
What is the Attraction of Gravitation, and what are its principal effects?
What is Magnetic Attraction—Attraction of Electricity—and Chymical Attraction?
What is the second class of animals in the Linnæan system, and what are the characteristics of this class?
What are the *Auricles*—of the ear, and of the heart?
What is Aurora Borealis?
What is *Aurora australis*?
What is the *Auto da fe*?
What is the population of Austria?
What is an Automaton?
Whis is signified by the word Axiom?
What is an Axis—in geometry—in mechanics—in astronomy?

B.

What is the second letter of the alphabet, and its most important uses?
What idol of the Chaldeans resembled the Mars of the Greeks?
What is a Bag-pipe?
What is the office of the Balance?
How does the Baltimore Oriole build its nest?
What are the uses of the Banana tree?
How do the Turks use the drug called Bangue?
What is one of the greatest wonders of the vegetable kingdom?
What was the origin of Banks?
Of how many kinds are Banks?
What is the greatest Bank in the world?
When was the bank of the United States chartered?
Are there many banks in the United States?
What are the peculiarities of the Bannian sect?
What are different meanings of the word Barb?
Did Barbers ever practise surgery?
Who were Bards?
From what country were Barn Fowl imported into Europe, and what is the character of these domestic birds?
What is a Barometer, and how does the *atmosphere* act upon that instrument?
What is a Baron?
What are Barrows?
What are Barytes?
What is Basalt?
What is a Bashaw?
What is Bass in music?
What is the Bastinado?
What animal resembles a mouse and a bird?
What is a Battering Ram?
What is a Battle?
How many species of Bears are there?
Is the Beaver an intelligent animal?
Is the economy of Bees curious?
What is a Bell, and what are some of the most remarkable bells in the world?
What is Bismuth?
What is Bissextile, or Leap Year?
What is Bitumen?
What are Bivalves?
How is the Black Grouse described?
What is Blanching?
What is Blazonry?
What is a Block?
What is Blood?
What variety of the Hound is remarkable for his exquisite scent?
What is the Blow-Pipe?
What is the most remarkable serpent of South America?
What is signified by the term Body in geometry?
Of how many kinds are the bodies, termed *regular*?
What are *irregular bodies*?
What is Body in Physics, and when is a body *hard*, *soft*, and *elastic*?
What degree of heat is the Boiling-Point?
Is the same degree of heat necessary to the boiling of all fluids?
What are Bones, and what number of bones is found in the human body?
What is a Book?
Was paper always used as the material of books?
Upon what did the poets and legislators of Greece cause verses and laws to be written?
Upon what did the northern nations of Europe write?
Upon what substance did the Romans write?
What was the origin of the word Book?
Why was what is now called a *book* once called a *volumen*?
Have books ever been scarce in Europe, and what art has contributed to multiply them?
What is the art of Bookkeeping?
What is Botany, and what are the chief distinctions of plants?
How are *Roots* distinguished?
What is the difference of the Trunk and the Stalk of plants?
What is a Bud, and what are its uses?
What is a Leaf, and what are some of the appendages of Leaves?
What is Inflorescence, and what names are given to the different formations of flowers?
What is Fructification, and what are the different parts of flowers?
How may Fruits, or Seeds, be described?
Does the science of Botany teach more than the *structure* of plants?
The *anatomy* of plants, comprehends what parts?
What are the chymical constituents of plants?
What are the diseases of plants?
Who among the Greeks studied the laws of vegetable life?
Did the Romans reduce the nature of plants to a science?
Who in Europe, since the sixteenth century, has illustrated the science of Botany?
Who since the sixteenth century have been the successful cultivators of Botany?

Who in the eighteenth century was the most eminent Botanist, and what is his system?
How are *classes* of plants distinguished by Linnæus?
What are the distinctions of the *orders*?
What is a Bramin?
What is the Brain, and how are its parts distinguished?
What are the organs of Respiration in fishes?
How is the country of Brazil described?
What is the Bread Fruit tree, and what the qualities of its fruit?
What is Brewing?
What is a Brigantine?
What is Bronze?
Who were the Buccaneers?
Of what countries is the Buffalo a native, and how is he hunted?
What are Bulbs?
What are Bull Fights?
What is the Burning-glass, and what experiments have been made with *burning-glasses*?
What is a Butterfly, and to what transformations is this genus of insects subject?
What is a Buzzard?

C.

What are the most remarkable uses of the letter C?
What signifies the word Cabala?
What was the Caduceus?
Who was Cæsar?
What is a Calendar?
What is Calico?
Who were the successors of Mahomet?
What is Caloric?
What three forms of matter are produced by different distributions of *caloric*?
What two states of *caloric* are most remarkable?
What are the most effects produced by the action of *free caloric*?
Is *combined caloric* perceptible to the sense?
What are supposed to be the sources of Caloric?
What are principal varieties of the Camel, and what the uses of that animal?
What is the Giraffe?
What is Camphor?
What is a Canal?
Since what time have *canals* become common in Europe?
What is the extent of the Erie Canal—when was it begun and finished, and at what expense?
What other *canals* in the United States exhibit the enterprise of the nation?
How is a Cannon described, and when was the use of them introduced into the art of war?
What is the Canon of Scripture?
What insect is useful in medicine?
What signifies the epithet Capillary, and what experiment exhibits the law of *Capillary Attraction*?
What is the building called, in which a legislature sometimes assembles, and how is the Capitol of the United States described?
What is a Caravan?
What are Inns called in some oriental countries?
What is Carbon, and what are its principal uses?
What is Carbonic Acid?
What are the Cardinal Points?
What are Cards?
When, and for whose diversion, were Cards invented?
What is signified by the different figures upon *playing cards*?
What is the operation of Careening?
Who are Carmelites?
What is the art of Carpentry?
What is the meaning of Carte-blanche?
What are Cartoons?
What are Caryatides?
What is Cashmere?
Of what plant did the native Americans make bread?
What are the *Castes* of Hindoostan?
What is a Castle?
What are Catacombs?
Who were Catechumens?
What are the Categories of Aristotle?
What is signified by the epithet Catholic?
What is a Cavern?
What is Cayenne Pepper, and what are its uses?
What was the office of Censor in ancient Rome?
What are Censors in modern times?
What is the Centre of Gravity?
What are understood by *Centrifugal* and *Centripetal* forces?
What is a Century?
Who was Ceres?
What are different applications of the word Certainty?
What is a Challenge?
What is the Chameleon?
What is the office of Chamberlain?
What officer in England is next in dignity to the sovereign?
What is a court of Chancery?
What is a Chaplain?
What was a Chariot?
What is Cheese?
What is the game of Chess, and what is its best use?
What insect in the West Indies is troublesome and dangerous?
What are the extent, populousness, curiosities, and national character of the Chinese Empire?
What is Chiromancy?
What is Chocolate?
What festival celebrates the nativity of Christ?
What does the science of Chronology teach?
On what account is it supposed that the Hebrews observed weeks of seven days?
Of what duration were the weeks of the Greeks and Romans?
From whom have we taken the names of the days of the week?
What is a year?
Did the Egyptians, Hebrews, and Greeks, adopt the same division of time for a year?
What was the Roman year, and who reformed the calendar?
What computation, and what calculation consequent to it, was made in 1582?
What is signified by *Old* and *New Style*?
What attempt was made by the Greeks towards a regular system of Chronology?

What were the Metonic Cycle, the Cycle of Eudoxus, and the Calippic Period?
What are the Solar Cycle, the Dionysian, and Julian Period?
Is the application of Chronology to history of late date?
What is signified by the word Church?
What does the science of Chymistry teach, and what are its uses?
What is the first distinction made by Chymists in respect to *substances*?
What are *simple substances*?
What are *compound substances*?
What rank among compounds is given to Acids—how are acids formed, and how are they distinguished?
What are salts—when are salts denominated *neutral*—when are they distinguished by the prefixes, *super* and *sub*; and when are they termed *triple salts*?
What are Alloys and Amalgams?
What are some of the substances termed *compound combustibles*?
Of what does Chymical Action consist?
What are signified by Decomposition and Combination?
What are Analysis and Synthesis?
In what modes does the *principle of attraction* manifest itself, and by what processes are chymical investigations pursued?
In connexion with what arts were chymical laws first manifested?
What *false* science contributed to the development of *true* chymical science?
Did the Science of Medicine and the useful arts afford new lights to Chymistry?
Who in Europe, and in recent times, have contributed to the advancement of this branch of human knowledge?
What is Cinnamon?
What is a Circumference?
How is the Circumferentor?
What is a Circus?
In what vessels is rain-water preserved?
What is Citron?
In what building are courts held in the city of New-York?
What animal affords *musk*?
On what occasion was the Civic Crown bestowed?
What is signified by the Civil Year?
What literary works are Classics?
Who among the ancients are *classic* authors?
What is Clay?
What are the principal *clays*?
Who are the Clergy?
What is the meaning of Client?
Do physicians regard any period of human life as *critical*?
What is the difference of a Cloud, Mist, and Fog?
What plant produces Cloves?
What is Coagulation?
What mineral is used for *fuel*, and where is it found?
What are Coats of Arms?
What the properties of Cocculus Indicus?
What *insect* is used in dying *red*?
What is the *internal* cavity of the ear called?
How long before the *grub* of the Cockchaffer assumes a perfect form?
What is a Cockroach?
What vegetable substance is manufactured into Chocolate?
Of what countries is the Cocoa-Nut-Tree a native, and what are its uses?
What fish abounds near Newfoundland?
Of what countries is the Coffee-Tree a native?
What is the operation of Coining?
How many pieces of money by means of improved machinery may be stamped in an hour?
Is Cold only the *abstraction of heat*?
What order of insects has four wings?
What is a Collar in Heraldry?
What is a Colony?
What immense statue was anciently placed in the harbour of Rhodes?
What is Sir Isaac Newton's theory of *Colours*?
What are *primary* colours?
What are *secondary* colours?
What is a Column in *architecture*, and what are its different parts?
What are supporters of Combustion?
Is Oxygen ever obtained alone, and what are its principal combinations?
What is a Comet?
What is Commerce?
What fact recorded in scripture proves that the Egyptians and Arabians were engaged in mutual traffic in an early period of human society?
What people of Asia were next distinguished in the history of Commerce, and what were the principal cities of that people?
What colony did the Phœnicians establish in Africa, and what were the achievements of the Carthaginians?
What was the state of Egyptian commerce under the successors of Alexander?
Did Commerce flourish in the Roman empire?
What brought Commerce to a stand in Europe, and what was the origin of Venice?
What city became the rival of Venice?
What cities in Germany have distinguished themselves in the modern history of Commerce, and how was their prosperity cherished by the governments of Europe?
Did the Hanseatic cities preserve the harmony of their intercourse with the states of Germany?
What cities of Germany are still called Hanse towns?
What important discoveries in the fifteenth century extended European commerce?
How did the Dutch distinguish themselves in the sixteenth century?
Did the Britons follow trade?
Did the Saxon kings of Britain cherish commerce?
What progress did commerce make in England in the reign of Edward I.—in that of Edward III.—and in that of Edward IV.
When did the English commence their trade with Russia?
What was the progress of trade in England in the reign of Elizabeth?
When was the East-India Company founded?
In what manner has English commerce continued to increase?
What is the command of a Commodore?
What is the Mariner's Compass?
What is Composing (in Printing?)
Of what orders in Architecture is the Composite formed?

Which of the five orders in Architecture is the most highly ornamented?
Does the Concave Lens operate like the Convex Lens?
What four specimens of the Concave Lens are indicated by the letters, A B C D?
What is Conchology?
How are *testaceous* animals composed?
What are Conductors (in Electricity?)
What is the American Vulture?
What is a Cone—in Geometry—in Botany—in Conchology?
What is *Confirmation*?
Who was Confucius?
What is Congelation?
By what known laws is Congelation regulated?
What is a Congregation?
What is Conjugating (in Grammar?)
What is Consequence?
What is a Constellation?
In what ancient writings are Constellations mentioned?
What is the Constitution of a country?
What are Converging rays?
What is an assembly of the church called?
What is a Coot?
How much heavier is Copper than water?
What mode of printing is Copper-plate Printing?
What in law is Copyright?
How is Coral described?
From what tree is Cork obtained?
What use do the Chinese make of the Cormorant?
What is Maize?
What machine is used for pulverizing corn?
What association is called a Corporation?
What is a Corsair?
What people inhabit the borders of the Neiper and the Don?
What vegetable product is an important article in American manufactures?
What is a Covenant?
What is a Council of War?
What disease is an antidote to Small Pox?
What are Crabs, and what species is remarkable?
What is Credit, (in Commerce?)
What is a Crescent?
What animal is the largest of the lizard tribe?
What is the Elevation of the Cross?
What is a Crown?
What Wars were called Crusades?
What is the characteristic of the class Cryptogamia?
What substance is Crystal?
What is the process of Crystallization?
What is a Cube?
What is a Cupola?
What was the Curfew?
What is Currency (in law?)
Who was Cybele?
What tree is an emblem of death?

D.

What is the fourth letter of the alphabet, and of what terms is it used distinctively as an initial?
What is a Dairy?
What tree produces Dates?
What insect lives but one day?
What is a Death-watch?
What is understood by Debenture?
What is a space of ten days called?
What are the *ten commandments* usually termed?
What distinguishes the class Decandria?
What is Decomposition?
What is Defamation?
Who was styled Defender of the Faith?
What is a Depot?
What is Despotism?
What is Detonation?
What is Diæresis?
What were the Greek Dialects?
What is the hardest of all bodies?
What diamonds are of the greatest value?
What country affords many Diamonds?
What is one of the most brilliant insects in the world?
How is the class Diandria distinguished?
What was a Dictator?
How is the class Didynamia known?
What is a Die (in coining?)
What is Digitalis?
How is the class Dioecia known?
What is Diplomacy?
What is a Dispensation in Ecclesiastical affairs?
What is a Distich?
What is Distillation?
What is Distributive justice?
How were hymns to the heathen god Bacchus denominated?
How is the term Dividend understood in commerce?
What was Divination?
Is the Diving-bell a useful machine?
What is signified by the term Doctor?
What are the distinctive characters of the botanic class Dodecandria?
How has Linnæus classed the Dolphin?
How is the game Domino played?
What are the habits of the Dormouse?
Are there more than one sort of Dove?
What is the Dragon Fly?
How do Dragoons fight?
What is Drapery?
What game is sometimes played on a Chess-board?
What are the fancies of a man in sleep called?
What is Drilling?
What is the Camel with a single bunch called?
Is there any mode of recovering *drowned* persons?
Who were the ministers of religion among the ancient Britons?
What is a Dry-dock?
What is a Duel?
Who were two of the most remarkable Dwarfs?
Of what bodies does the science of Dynamics treat?

E.

What are some remarkable uses of the letter E?
What is the strongest, swiftest, and boldest of birds?
What is the organ of hearing, and what are tha concha, the tympanum, and the eustachian tube?
What is Earth (in astronomy?)

Where is the Earth's orbit?
How far is the Earth from the sun?
What are the Earth's motions?
Of what is the Earth's surface composed?
What is the true account of the origin of the Earth?
What is an Earthquake?
What feast of the Christian Church celebrates the resurrection of our Lord?
What is Ebony?
What is an Echo?
Where are the most remarkable Echoes?
What is an Eclipse?
Do Eclipses of the Moon happen at the *new* and *full moon*?
How long may the Sun be totally eclipsed?
What is the general sense of the word Economy?
What is Education?
What are the characteristics of the Eel?
What is an Effigy?
What is Effluvia?
When is a body said to be Elastic—when *hard*—when *soft*?
Is water non-elastic?
What is the most *elastic* fluid with which we are acquainted?
What is supposed to produce that consistence of bodies called *solidity* and *fluidity*?
What is the mode of Election to public offices?
What is an *Electric*?
What are Non-electrics?
What appearances are exhibited by Electrics?
What is the Electric Fluid?
What is the Electrical Apparatus?
What science treats of the Electric Power?
Have any animals the power to give Electric shocks?
Were the ancients acquainted with the Electric fluid?
Who, during the seventeenth century, and immediately after, made discoveries in the science of Electricity?
Were the experiments of Mr. Grey serviceable in the science of Electricity?
Who at different times has further prosecuted discoveries in Electricity?
What is signified by Elements—in Chymistry—in Geometry—in Divinity—in Grammar?
What quadruped is the largest at present known?
What is signified by the Elevation of the Host?
What large species of Stag was once common in Ireland?
Of what does Elocution consist?
What art preserves the form of dead bodies?
What precious stone is of a green colour?
What is an Empiric?
What is Endorsing?
Of what languages is the English compounded?
What is the southern division of Great Britain?
What are the physical and social advantages of England?
What is the extent of England, and what is its population?
What is Engraving?
Is Engraving an ancient art?
What are the *engravings* first spoken of in Scripture?
Was the art of Engraving known to the Carians, the Celtæ, and the Egyptians?
What state of the art do Phœnician coins exhibit?
What curious remnant of antiquity represents the art of Engraving in Britain several centuries ago?
In connexion with what arts was Engraving first employed in England, and for what purpose?
What is the supposed origin of Engraving upon *paper*?
In what country was Engraving *on wood* first practised, and who were the most eminent engravers?
What is one of the earliest specimens of *prints*?
When were Mezzotinto and Aquatinta first practised?
What are the characters of the botanic class Enneandria?
What science describes Insects?
What are the principal parts of Insects?
How are eyes disposed in Insects?
What are Antennæ?
How is the mouth of Insects described?
What are the several parts of the trunk in Insects?
What is the third division of an Insect's body, and its parts, and their uses?
What are the *extremities* of Insects?
What number of wings belong to Insects?
Is the internal structure of Insects easily demonstrated?
Do the *digestive organs* of Insects exhibit great variety?
Are the *respiratory organs* of Insects similar to those of other animals?
Are Insects *bloodless*?
How is *secretion* performed in Insects?
How is *sex* distinguished in Insects?
What are the Metamorphoses of Insects?
What is the first—second—third—fourth state of Insects?
What is the duration of existence in Insects?
What are the seven orders which Linnæus introduced into Entomology?
Were the ancients acquainted with the science of Entomology?
Who in the seventeenth century wrote upon Entomology?
What optical instrument renders important service to Entomology?
What have the labours of Swammerdam, Ray, Willoughby, and Linnæus, severally accomplished in Entomology?
What is the Epicurean Philosophy?
What is commemorated by the festival of Epiphany?
What are the principal Epochs in the history of mankind?
What is Equilibrium?
What is the Equinoctial Line?
What is a Court of Equity?
What is the Ermine?
What proof of *providential* care is exhibited in the habits of animals inhabiting the *artic regions*?
What is Escalade (in war?)
What is an Escutcheon?
Who was the ancient attendant of a *Knight*?
Who are styled the British Essayists?
What is Ether?
What science relates to human conduct?

What remarkable mountain exists in the island of Sicily?
What is the meaning of the word Evangelist?
What is the Eucharist?
What is Evil?
What is Euphony?
What is Exchange (in Commerce?)
What is Excommunication?
What is Exhibition?
What is Expansion?
What is Experimental Philosophy?
What is signified by Ex Post Facto?
What is Exuviæ?
What is the organ of sight, and what are its parts?

F.

What are some of the most remarkable uses of the letter F?
What is a Fable?
What are Faculties (in the Universities?)
What is Faculty (in Physics?)
What use was formerly made of the Falcon?
What is a Farce?
What is Farina?
What optical illusion is sometimes produced in the Strait of Messina?
What is Fate?
What are Feasts?
What is signified by the term Fee?
What is Felony?
What is Fermentation?
What is Feud?
What is Fibrina?
What Fruit of the tropics will grow in the open air in Philadelphia?
What is the use of a Filtering Stone?
What great natural curiosity exists in the island of Staffa?
By the action of what fluid are all bodies expanded?
Why is it presumed that Fire is a substance?
What is the fourth class of Linnæus in Zoology?
What are the orders into which fishes are divided?
What is the use of *fins*, and what are some of the habits peculiar to this class of animals?
What is Fixed Air?
What is Flame?
Of what plant is *linen* made?
What is Flint?
Who was the goddess of *flowers*?
What is a Flower?
What is a Fluid?
What is Fluidity?
What is the distinction between *liquid* and *fluid* bodies?
What is Fluxions?
In what seas is the Flying-Fish found?
What is a Focus?
What part of a ship is the Forecastle?
What is Forgery?
What is a Fort?
What is the science of *military* architecture?
What are the principal works belonging to a Fortification?
What part of the United States exhibits ancient *fortifications*?
What impostors pretend to know future events?
What is the character of the Fox, and what does he denote in *heraldry*?
What is Freezing?
How may Freezing be artificially effected?
What is a French Horn?
What is the population of Paris estimated to be?
What is a Frigate?
What are the peculiarities of the Frog?
What is a *truncated* Cone?
What is signified by the word Fulcrum?
What is the operation of Fulling?
What is Fulmination?
What are Fungi?
What is a Fusee (in clockwork?)

G.

What are some of the most remarkable uses of the letter G?
What is the secretion of the liver?
What is a Galley (in Shipbuilding?)
What is a Galley-slave?
What is the Galvanic Battery?
What is Galvanism, and who discovered it?
Who, after the death of Galvani, made further experiments in Galvanism?
Of what does the Voltaic or Galvanic pile consist?
Who improved the Galvanic apparatus?
What animals are regarded as Game?
What is the Gamut (in Music?)
What is a Garden?
Is Gardening mentioned in the Scriptures?
What Garden has Homer described?
What were the *hanging gardens* of Babylon?
From whom did the Greeks probably derive a taste for Gardening, and how did they embellish their gardens?
Did the Romans practise Gardening?
What fruits did Lucullus introduce into Italy, and where was his garden?
What effect did the *gardening* of Lucullus produce in Europe?
What is the taste of modern Gardening?
What is the Order of the Garter?
How are Gas-lights produced?
Is oil-gas preferable to coal-gas?
What is the Gasometer?
What in animal bodies is the principal solvent of food?
What is the Gazelle?
What is a Gazette?
What is a Gem?
How are Gems imitated?
What is Generic character (in natural history?)
What is the second case in Greek and Latin nouns?
What is signified by the term Gentiles?
What is a Gentleman?
What science describes the Earth?
What department of Geography is *chorography—topography—ancient* geography—*sacred* geography?
What circles are marked upon the artificial globe, and for what purpose?
What are *climates* and *zones*?
Who are *antipodes—antœci—periœci*?
How are different portions of *land* distinguished?
How are different portions of water distinguished?
How is the earth *politically* divided?

Does Geography treat of the action of *tides*, *winds*, and the meteorological peculiarities of different regions of the earth?
By what representations is the science of Geography illustrated?
What are the signs by which the natural and artificial features of the globe are indicated?
What are the uses of the *artificial* globe?
Were the ancients acquainted with Geography?
What authors among the Greeks contain geographical notices?
Who first applied astronomical principles to Geography?
Did the Romans render Geography more correct?
How did Ptolemy improve the science of Geography?
Who, in successive ages, has extended the knowledge of Geography?
What science treats of the structure of the globe?
Under what two heads may Geology be considered?
Is the fact of a universal Deluge demonstrated by many appearances of the earth?
What is the structure of mountains?
What are primitive rocks?
What are *diluvium* and *alluvium*?
What is the formation of *transition* rocks?
What are the *organic remains* found in the earth?
Do the remains of animals found in different places correspond with the present native animals of those respective parts of the earth?
Have *organic remains* formed curious collections?
What animals of immense size have been discovered among organic remains?
Did the ancients take notice of *organic remains*?
What branch of Mathematics is Geometry?
What are *practical—speculative—transcendental* Geometry?
What are the most important definitions in Geometry?
How are *triangles* distinguished?
What are four sided figures variously called?
What are the *base—vertex—altitude* and *area* of a figure?
How is a *circle*, &c. described?
How are *solids* distinguished?
What is *ratio*?
What is meant by *axiom—postulate—proposition—problem—theorem*?
To what nation is the origin of Geometry ascribed?
From what circumstance is it presumed that the Greeks learned Geometry from the Egyptians?
What did Pythagoras invent, and who were his successors as *geometricians*?
How did Hipparchus distinguish himself?
Who invented *conic sections*?
When did Euclid live, and how did he become celebrated?
What additions did Archimedes make to the science of Geometry?
What eminent Geometricians flourished after Archimedes?
What unfortunate circumstance interrupted the cultivation of Geometry?
What people revived the study of Geometry?
From the fourteenth century to the present time, who have advanced the science of Geometry?
For what are the Germans remarkable?
What is Germination?
Where is the Giant's Causeway?
What predatory and partially civilized people are distributed in all the nations of Europe?
Who were Gladiators?
How is Glass made?
What are the characters of the class Glires (in zoology?)
What insect emits a beautiful phosphoric light?
What is Gluten?
What is the pin of a dial called?
What are the properties of Gold?
What pleasure barges are used at Venice?
What are the *gospels*?
How are modes of Government distinguished?
What is the process of Grafting?
What is the fifth family of the Linnæan system?
What is the art of *speaking* and *writing* correctly?
Of what do the four parts of Grammar respectively treat?
Is Grammar derived from the practice of speech?
How did the Greeks first cultivate elegance of speech?
Did the common people among the Greeks comprehend the beauties of their language?
How did young people at Athens acquire a literary taste?
Did the Romans form and study Grammars?
What is the title of the Emperor of the Turks?
What is the Grape?
What is Gravity (in Physics?)
What is *specific gravity*?
What substance is the standard to which the specific gravity of other substances is referred?
What does a cubic foot of rain water weigh?
What remarkable fountain exists in Iceland?
What was the character of the ancient Greeks?
What is the present condition of Greece?
What use, in English Books, is made of the Greek Alphabet?
Where is Greenland, and what is said of the men and animals of that country?
What English dog is remarkably *fleet*?
What is a Group (in Painting?)
What bird resembles the Partridge?
What is a Guardian?
Who are the Guebres?
In whose reign were Guineas first coined?
What is Gum?
What is Gunnery?
Of what is Gunpowder composed?
What is the velocity of a musket ball?
What is a Gymnasium?
What are Gymnastics?
Who were the Gymnosophists?
What is the Gymnotus?
What are the characters of the botanic class Gynandria?

H.

What is the eighth letter of the alphabet, and what are its most remarkable uses?
What is the writ called Habeas Corpus?
What is the structure, and what the use of Hadley's Quadrant?
What is Hail, and how is it formed?
What is Hair, and what are its chymical elements?
What is Hallucination?
By what member is man particularly distinguished from inferior animals, and how many bones are contained in it?
What, in relation to horses, is signified by the word Hand?
What qualities distinguish the Hare?
What musical instrument is of great antiquity, and what are its peculiarities?
What instrument is used in spearing the whale?
What is Hatching?
What bird was formerly used in Falconry?
What is the centre of circulation in animal bodies, and what are its parts?
How, among smiths, are degrees of Heat distinguished?
How is the word Heaven understood in the science of Astronomy?
What is the Hedgehog?
What is the Hegira in Chronology?
What part of a ship is the Helm?
What is the second order of Insects in the Linnæan system?
What Hemispheres form the globe of the Earth?
What are the characters of the class Heptandria (in botany?)
What is Heraldry?
Among what people is it supposed that Heraldry originated?
How were those persons among the Romans who had, or who had not family images, distinguished?
Where were family statues and armour kept by the Romans?
How did the northern nations of Europe, and men, during the existence of the feudal system, form armorial bearings?
Did the Crusades and Chivalry contribute to form Heraldry into a science?
What remarkable events distinguished the city of Herculaneum?
What is Heresy?
What is an Hermetical seal among Chymists?
What is the height of the Heron?
What are the characters of the class Hexandria?
What signs were used by the Egyptians previously to the invention of letters?
What people inhabit the northern section of Great-Britain, and what is the population of Edinburgh?
What animal is supposed to be the Behemoth of the book of Job, and what are the qualities of that animal?
What are the principal distinctions in History?
Who are the inhabitants of the Netherlands, what is the character of that country, and what is the population of Amsterdam?
What is Honey—how is it obtained, and where is it most abundant?
What are Honours of War?
What is the Hop—what cultivation is proper for Hops, and how are thy prepared for use?
What is Horology, and what instruments are employed in it?
Are Dials of great antiquity?
What mathematicians have written upon the construction of Dials?
Who first constructed the Clepsydræ or water clock, and what inconveniences attend the use of this instrument?
What is the most beautiful and useful of domestic animals, and how is the age of this animal ascertained?
What is a Horse-Race?
What is a Hortus Siccus, and how is it prepared?
What is the Hosanna?
What is a Household?
Who were the Huguenots?
What are the Humours of the Eye?
What is the Hyæna?
What is described by the science of Hydraulics?
Of what does Hydrodynamics treat?
Had the ancients any practical knowledge of Hydrodynamics, and what modern philosophers have written upon this science?
What is the lightest matter known to exist?
By what combination does Hydrogen produce water?
What produces domestic lights?
In what manner is Hydrogen gas manufactured for the use of Balloons?
What is a Hydrometer, and what is the difference between it and an Aerometer?
What is Hydrostatics, and into what branches is the science divided?
By what experiment did Archimedes demonstrate the relative weight of gold and silver?
What is Hyperbole?
What side of a triangle is the Hypotenuse?

I and J.

What is the ninth letter of the alphabet, and its more remarkable uses?
What is the chymical composition of that meteor called Jack-with-the-lantern?
What is the Tiger of Brazil?
What country affords Jalap?
What were the Janizaries?
What nations still worship idols?
What mountains does the Ibex inhabit?
How does ice differ from *fluid* water?
What is Ichthyology, and how are the five orders of fishes distinguished?
What are the characters of the botanic class Icosandria?
What is the Hebrew name of God?
What is the history of the Jesuits?
Who are the Jews, and what is their history?
What is Illuminating?
What is Immersion?
What is God's attribute of Immutability?
What is Impeachment?
What is an Improvisatore, and in what country do such persons exhibit their talents?
What is Inauguration?
How is the Inclined Plane described?
Of what substance is Incombustible Cloth made?
What is Incubation?
What is the Index of a watch?
Is Indian rubber a vegetable substance?

What is the use of Indigo, and what is its composition?
What is Infinity?
What is Ink?
What is Inoculation (in Gardening?)
What is the fifth class of animals in the Linnæan system, and into what orders is it divided?
What is signified by the term Institute?
What book is called the Institutes?
What is Insurance (in Law?)
What are Intaglios?
What are Integuments?
What is Interest (in Commerce?)
What is an Interregnum?
What, and how disposed are the Intestines of animals?
What is an Invoice?
What is Iodine?
What is the Ionic order (in Architecture?)
What is a Journal?
What is the botanical name of the flower de luce?
What is the most useful of the metals, and what are its distinguishing properties?
What are the principal varieties of Iron?
What is Black-lead?
Is Iron-smelting an easy operation?
What is a remarkable property of Island-crystal?
What is the country of the ancient Romans, and what is its present state?
How was the Jubilee observed by the ancient Hebrews?
What is the Jubilee of the Catholic church?
What is Judgment (in Law?)
What is the Julian year?
What are the properties and uses of the Juniper tree?
What is Ivory,—its properties and uses?
Who was Jupiter, and who was his wife?
What is Jurisprudence?
What is a Jury?
What is Juxtaposition?

K.

What is the tenth letter of the alphabet, and what are its most remarkable uses?
Who are the Kalmucks?
Where is the country, and what are the habits of the Kamscnatkans?
What is the Khamsin, and what are its effects?
What is the Kangaroo, and what are its peculiarities?
What is the Keel of a Ship?
What is the Keep in old castles?
What is Kelp?
Is Kermes an animal or vegetable substance?
What is the Key-stone of an arch?
What is a King?
In what capacity does the King of England never die?
What is the Kingfisher?
What distinguishes the Kite from other birds?
What is the present signification of the word Knight, and how is the title now conferred?
What is Mr. Locke's definition of Knowledge?
What is Knowledge commonly considered?
What are the observations of Dr. Watts on the attainment of Knowledge, and what rules may be advantageously observed in the cultivation of the mind?
What is the book of the Mahommedan doctrine?
What splendid building exists in Moscow?

L.

What are the most remarkable uses of the letter L?
What is a Laboratory?
What is a Labyrinth?
What is Lac, and its uses?
What are several parts of the eye called?
What is Lacker?
What is Lactic Acid?
Where is the Grand Lama worshipped, and how?
Who was the inventor of the Argand lamp, and what are the advantages of that lamp?
How is the Fire-fly, or Glow-worm, described?
Of what do Land-remains consist?
What is Language?
What is supposed to have been the primitive language of mankind?
Did new and different languages originate in the dispersion of mankind?
Did the Chaldean and Syrian languages resemble the Hebrew?
Did the ancient Egyptian resemble the Hebrew language?
Do the Arabian and Ethiopic resemble the Hebrew?
Why should the Punic and Maltese languages resemble the Hebrew?
Does the Greek appear to have been a primitive language?
Does it appear that the Celts or Gauls were a primitive stock of European nations?
How is it presumed that the Latin language originated?
Do the languages of northern Europe exhibit any resemblance to those of the southern countries?
What circumstances have modified the French, Spanish, and Italian languages?
Is the English language formed from divers continental languages?
In what part of Europe is Lapland, and how distinguished?
What is Larceny?
What were the domestic gods of the Romans?
What is the Larynx?
What language was spoken by the ancient Romans, and what use is made of that language at the present time?
What is Latitude?
What substance is thrown out by volcanoes?
What is Lead, and what are its distinguishing properties?
What measure of length is a League?
What is Leap year?
What are the uses, and the structure of the leaves of plants?
What is the Leech, and what are its uses?
What is a Legacy?
How many troops formed a Roman Legion?
What is a Lens?
How are four different forms of Lenses represented, and what are their respective powers?
What is the character of the Leopard?
How is the order Lepidoptera described?
What is a Letter (in Grammar?)
What is the instrument called a Level, and how is it constructed?

What is a Lever—the fulcrum, the power, the arms of the lever, &c.?
What is the Leyden Vial, and what are its uses?
What was a Libation?
What is Liberty of Conscience?
What is a Library, and what have been, and are, the most celebrated libraries in the world?
Is the *essence* of Light understood?
What is that science called which describes the laws that regulate Light?
What is a Light-house, and what is the design of Light-houses?
Is Lightning an electric Phenomenon?
Who proved the analogy between Lightning and Electricity?
In what particulars do Lightning and the Electric fluid agree?
What is Thunder?
How many feet does Sound move in a second?
What is a Limb in animal bodies?
Where is Lime found in the purest state?
Who invented the Linnæan system, and what does it comprehend?
What use is made of Linseed?
What animal is called the *king of beasts*, and what are the characteristics of the *male* and *female*?
What is understood by the word Lists?
What is Lithography?
By what process is Lithographic engraving accomplished?
What is signified by a Liturgy?
What animals belong to the Lizard tribe?
What ore is possessed of the property called Magnetic Attraction?
What is a Loan (in political economy,) and what is the *national debt* of Great Britain?
What is a Locomotive Steam Engine, and what is its operation?
What insect desolates some countries by its ravages?
What are Logarithms, and their uses?
What is Logic, and what is the order of its application?
What is Logwood, and where is it found?
What is the Longitude of a place?
What is the Lord's day?
What is a Lottery?
Who are Lunatics?
What are Lungs (in animal bodies,) and what is their use?
What was the ancient ceremony of Lustration?
How are the doctrines of Martin Luther denominated?
What are Lymphatics (in animal economy?)
What is a distinguishing property of the Lynx?
What musical instrument was much used by the ancients?

M.

What are the remarkable uses of the letter M?
What is Mac-adamizing?
What is a Machine?
What are Maculæ—who discovered them, and what are their positions, apparent velocities, and shapes?
What whirlpool exists on the coast of Norway?
Who were the Magi of the Asiatics?
What is Magna Charta?
By whom was the Magna Charta first granted—by whom renewed, and what is the present Magna Charta?
What is Magnetism?
Can Magnets be artificially formed?
What is Magnifying?
What is the character of the Magpie?
What is Mahogany?
What is Majesty?
What is Maize?
Who are the Malays, and what is the character of the island of Sumatra?
What is Malleability?
Who were the Mamelukes?
What is the first class of animals in the Linnæan system?
How is Man defined?
What are the varieties of the human species?
What tree of Surinam resembles the Banian tree?
What is Manna?
How is the Mantis distinguished?
What is Marble, and where is it found?
What are Marine Remains?
Who was Mars?
Who were the Masorites?
What is Mass?
What is Mathematics, and what are the branches of that science?
What is the Matrix in Mineralogy?
What is Matter?
What are the most obvious modifications of water?
What is a Mausoleum?
How is Mead made?
What is a Meadow Lark?
What is the general meaning of the word Measure?
What are the Mechanical Powers?
Of what does the science of Mechanics treat?
How did Sir Isaac Newton divide this science?
Were the ancients acquainted with *practical* Mechanics?
What ancient philosopher treated of the *theory* of Mechanics?
What moderns have illustrated the science of Mechanics?
What is a Medal?
What is a Medium (in physics?)
What is the Melve?
What is the art of Mensuration, and what did the speculations of Archimedes effect in this science?
Who was Mercury?
How is Quicksilver distinguished from other metallic substances?
What are the distinguishing properties of Metals?
What is the Metempsychosis?
What is a Meteor?
What is Meteorology?
What instruments are used to demonstrate changes in the Atmosphere?
What is the character of the Mexicans?
What are the different uses of the Microscope?
Is the inventor of the Microscope known?
What animal fluid is used for the nourishment of animals, and what is its chymical composition?
What is the Mimosa?
What is a Mine?

What is Mineralogy?
What is Misletoe?
What is the smallest of Insects?
What is a Model?
What is the character of the Botanic class Monadelphia?
What is the character of the class Monandria?
What is Money?
What inferior animal resembles man, and what are its qualities and habits?
What is the character of the class Monœcia?
What is a Month?
Who are the inhabitants of the Barbary states, and what is their character?
What is Morality, and how is it distinguished from *religion*?
What is a Mosque?
What are Mountains, and what are the principal ridges in the world?
What are the several uses of the word Mouth?
For what is the Mulberry tree valuable, and where?
What are Mummies?
What is a Muscle (in Anatomy?)
Who were the Muses?
How is the science of Music divided?
To what people is the invention of musical instruments ascribed?
Did the Greeks cultivate Music?
Are primitive poets of all countries also musicians?
What musical instruments were used by the ancients?
Who invented *musical* characters?
Who, of the ancients, has written upon Music?
What prevented Music from falling into entire neglect?
When and where was church Music first cultivated?
Who were the itinerant musicians of France, &c.?
What does the word Mussulman signify?
What is Mythology?

N.

What is the thirteenth letter of the alphabet, and what are its most remarkable uses?
What is the Nasturtium?
What is Natron, and where are Natron lakes?
Where is a Natural Bridge, and how is it described?
What is Natural Philosophy?
The science of Ship-building is termed what?
What is the first ship upon record?
How did the Egyptians construct and navigate the bark used anciently upon the Nile?
With what vessels did the Phœnicians first explore the Mediterranean?
Did the Greeks advance the art of Ship-building?
From what people did the Romans obtain the first models of ships?
What circumstances afforded improvement to the Naval Architecture of Europe?
What progress has Naval Architecture made in Britain since the reign of Henry IV.?
What in 1829 was the respective Naval Force of the different countries of Europe?
What is the present Navy of the United States?
What is the art of conducting ships upon the sea?
What ancient nations distinguished themselves as Navigators?
What proofs remain of the naval superiority of the Phœnicians?
What was the principal use made by the Greeks and Romans of their shipping?
Did the spirit of commerce appear in the crusades?
How did the Portuguese advance Navigation in modern times?
How is the first voyage of discovery made by Columbus described?
How are Columbus's subsequent voyages described?
Who discovered the Cape of Good Hope?
Who further promoted Navigation?
What writers have illustrated the science of Navigation?
What are Nebulæ?
What is Necromancy?
Who are the principal natives of Africa, and what are their circumstances?
Who was Neptune?
What are Nerves?
What is a Newspaper?
What is one of the most remarkable natural curiosities in the world?
What is the length and breadth of Niagara river?
What is the height of the Falls of Niagara?
On which side of Goat Island is the Horse-shoe channel?
What is the best view of Niagara Falls?
What is the most melodious singing bird known?
What is Nitre, and where is it found?
What is Nitrogen?
What is the composition of *atmospheric air*?
Will Nitrogen support animal life?
Who are the Norwegians?
What is Number (in Arithmetic?)
What is Numismatics, and its use?
What is Nutmeg?

O.

What is the fourteenth letter of the alphabet, and what are its principal uses?
What tree is celebrated as Timber?
What is an Oath?
What is an Observatory?
What is the Ocean, and under what divisions is it comprehended?
What are the characters of the botanic class Octandria?
What is the Œsophagus?
What is Oil, and how are Oils distinguished?
What was an Olympiad?
What is the Omnipotence of God?
What is Opal?
What is Opium?
Which are the Optic Nerves?
What science treats of Light and Vision?
How is the science of Optics divided?
Did the ancient philosophers investigate the science of Optics?
Was the *burning-glass* known to the ancients?
Was the magnifying power of glass known in early times?
What ancient and modern philosophers have illustrated the science of optics?
From what country were Oranges imported into Europe?

What is an Orchestra?
What are religious Orders?
What are Ores, and how are they classed?
What is an Organ (in Physiology?)
What branch of Natural History describes birds?
Were the ancients conversant with Ornithology?
Who among the moderns have illustrated Ornithology?
What is an Orrery, and how is one constructed?
What part of grammar is Orthography?
What are the properties of the Ostrich?
What are the characteristics of the Otter?
How is the Ourang-outang described?
Are the Sandwich Islanders idolaters, and has any improvement been recently made in their condition?
What is Oxalic Acid?
What are the properties of Oxygen?

P.

What is the fifteenth letter of the alphabet, and its most remarkable uses?
Who are Pagans?
What is Painting and how is it distinguished?
Is it presumed that rude attempts at Painting are made by all savages?
What did the Egyptians represent by their primitive efforts at Painting?
How did the Persians, Arabians, Indians, and Chinese, display their skill in *Painting?*
What remains of Etruscan paintings still exist?
Who were the most eminent Greek *painters?*
From whom did the Romans derive the art of Painting?
Were moveable *paintings* or those upon walls most esteemed by the ancients?
Who founded the respective Italian schools of Painting?
How have different nations of Europe cultivated Painting?
What is Palladium?
What Planet is Pallas?
What are Palms (in Botany?)
What signifies the word Panacea?
What are the Pandects?
What is a Panorama?
Where and what is the Pantheon?
What is a Pantomime?
What is the Papal Crown?
What is Paper, and of what substance was Egyptian paper made?
What are the different sorts of Paper?
What is the Papyrus?
What is a Parachute, and its use?
What is the most splendid of Asiatic birds?
What was a Parasite?
What is the British Parliament?
How is the Parrot described?
What is the Parthenon?
How is the Partridge esteemed?
What is the Passover?
What is a Patriarch?
What is the Pay of the *army?*
What animal affords Pearls?
How is the order Pecora in Zoology described?
What is Penance?
What is Penetration of Bodies?
How is the botanic class Pentandria described?
What is the Pentateuch?
What is Pepper?
What does Percussion signify?
What is Perigee?
What is Perihelion?
Who were the Peripatetics of antiquity?
What is Persecution?
Who are the Persians?
What is Perspective, and how is it divided?
Who among the ancients and moderns have illustrated the science of Perspective?
What is Phosphorus, and is it highly combustible?
What are Physics and Physiology?
Who is a Pilgrim, and when and by whom was the first settlement in New-England made?
What is the business of a Pilot?
What are the properties and uses of Pine?
What is a Pinnace?
What are Pioneers, and how are they employed?
What signifies the word Pipe in building—in music—in anatomy—in commerce—among miners?
What is the third class of animals in the Linnæan system?
How many orders in this class, and what are the habits of fishes?
What is a Placard?
What are Planets, and how are they distinguished and enumerated?
What is a Planter?
What is Platinum, and what are its properties?
What is the function of a Plenipotentiary?
What is a Plough?
What is a Plumb-line?
Of what does the science of Pneumatics treat?
What are the principal properties of Air?
Had Aristotle and other ancient philosophers just conceptions of the properties of the *atmosphere?*
What false principle in Pneumatics was admitted by the ancients?
Who first demonstrated the pressure of the atmosphere, and invented the Barometer?
By what experiment did Torricelli establish the principle of the *gravity* and *compressibility* of air?
What philosophers successively endeavoured to ascertain the *specific gravity* of air, and what was the result of their experiments?
What instruments have been invented to illustrate the science of Pneumatics?
What is an amphitheatre, and which are the largest in existence?
Who are the inhabitants of Poland, and what is the state of that country?
What are the Poles of the earth?
Has any person been at the Poles?
What is Political Economy, and what are the uses of that science?
How are the botanic classes Polyadelphia, Polyandria, and Polygamia, described?
What are the properties of the Polype?
Who was the Pontifex of the Romans?
How is the chief priest of the Greek and Romish churches styled?
Who is the Pope?

From whom do Catholic Christians derive the authority of the Pope?
What prince in Europe first denied the authority of the Pope?
What part of Europe received the *Reformed* religion, and what part still remains Catholic?
What is Population, and how is the population of different portions of the globe estimated?
What are Pores in material substances?
What people inhabit Portugal, what is their character, and what is the capital of Portugal?
What is the Post-office, and when was the present transmission of mails first put in operation?
What is a Potter, and how is the operation of Pottery performed?
What was a Prætor?
What is Prayer?
What was a Prefect?
What is a Prelate?
What is Prescription (in Law?)
What is the *general meaning* of the word Press?
What is Printing?
What are the four kinds of Printing?
Where is Printing supposed to have been invented?
What are Privateers?
What is Produce?
What is Progression (in Arithmetic?)
What are Projectiles?
What is Proportion?
Who were first called Protestants, and on what account?
Who are the natives of Prussia, and what are the physical and social peculiarities of that country?
What was a Publican?
What is a Pulley, and what is its structure?
What is the Chrysalis state of insects called?
What is the Pupil of the Eye?
What is Putrefaction?
What are the Pyramids?
What is the Pythagorean system?

Q.

What is the sixteenth letter of the alphabet, and what are its most remarkable uses?
What is the Quadrature of the Circle?
What is the Quail, and what is the character of that bird?
What is Quarantine?
What is Quartz?
What are Quicksands?
What is Quoits?
What is signified by the word Quorum?

R.

What is the seventeenth letter of the alphabet, and what are its more remarkable uses?
What is the Rackoon?
What is a Railway?
What is the cause of Rain, and what is the depth of rain in different countries?
By what efficacy of *light* are Rainbows produced?
Can the Rainbow be artificially imitated?
To what class in zoology do the Frog and Toad belong, and what is the history of those animals?
How is Rancidity produced?
What is Rarefaction?
What is the Ratio of quantities?
What is Rationale?
What is the character of the Raven?
Do Rays of light generally move in direct lines?
By what surfaces is the direction of light changed?
What does the military term Rear signify?
What is a Recipe?
What is a ship's Reckoning?
What is a Reed?
What is Reflection in Natural Philosophy?
What are the laws of Reflection?
What is the Reformation?
What is the Law of Refraction in Optics?
What is a Regent?
What is Regimen (in Medicine?)
What is the character of the Reindeer?
To what people are the Reindeer particularly useful, and what are their services?
In what countries do Deer abound?
What is Relief, (in Sculpture,) and of how many kinds is it?
What is Religion?
What is a Representative government?
What is Reproduction?
What are Reptiles?
What is Rosin?
What is the animal process of Respiration?
What quantity of oxygen does a man consume in a day?
What is a Retort?
What is Revelation?
What is a Review?
What is Rhetoric, and what were Cicero's brief rules concerning it?
What quadruped is next in size to the Elephant, and how is the Rhinoceros described?
In what countries does Rhubarb grow?
What is Rice?
What is the Rigging of a Ship?
What is a River, and which are the principal rivers in the world?
What is a Road?
Who formerly constructed *military* Roads?
What is the extent of *turnpike* Roads in Great Britain?
What are *turnpike* Roads?
How, in the United States, in the Netherlands, and in France, are Roads maintained?
Who are Roman Catholics?
What is a Root (in Botany?)
What is the largest, and what is the smallest sort of Rope called?
What is the most esteemed of Flowers?
What was the Roman Rostrum?
What fact proves the Rotundity of the earth?
What precious stone is next in value to the Diamond?
How is the Grouse described?
What does the Ruminating of animals signify?
What country do the Russians inhabit, and what are the physical and moral features of Russia?

S.

What is the eighteenth letter of the alphabet, and what are its more remarkable uses?
What is a Sabre?
Who were the Sadducees?
What is Sago?
How many species of Salmon are there, and how is that fish esteemed?
To what substances is the term Salt applied?
What is Common Salt?
How are *essential* salts, *fixed* salts, and *volatile* salts, obtained?
What are Sandals, and by whom worn?
Who inhabit the Sandwich Islands, and how many inhabitants do they contain?
What is a Sarcophagus?
What are Satellites, and how many have the planets Saturn, Jupiter, and Herschel?
Who was Saturn (in mythology?)
How is the planet Saturn described?
What was the Saturnalia of the Romans?
What is the Saxon Arch?
What are Scales?
What is *ordinarily* signified by the word School—what in Philosophy, in Theology, and among Painters?
What is a Schooner?
What is a Scorpion?
On what account is Scrofula called the King's Evil?
What is a Sea, and what is the chymical composition of Sea-water?
What is a Sea-Cow, and what shores does it frequent?
What is the Seal, and what are its appearance and habits?
What is the common length of the Sea-horse?
What is a Secretary?
What, in organised bodies, is Secretion?
What part of a vegetable is the Seed?
What is Sense, and what are the organs of sense?
What is a celebrated Greek translation of the Hebrew Scriptures called?
What is understood by the word Series?
How is the order Serpentes in Zoology described?
What is a Sextant?
What is the Sexual System (in Botany?)
What is a Shark, and what are its habits?
What is the value of a Jewish shekel?
What is Sherbet?
What is the general signification of the word Ship?
How are the ships called Men of War, furnished?
Where is Siberia, and how is that country described?
Who, among the Romans, were the Sibyls?
What does the term Sidereal signify?
Have any fixed stars disappeared, any altered their appearance, and any only recently observed come under the observation of astronomers?
Under what forms is Silica found?
By what animal is Silk produced, and how obtained?
What is the native country of the Silk-worm, and when was that animal introduced into the Roman Empire?
What is the Simoom, and what are its properties?
What signifies the term Simultaneously?
What are the dried bones of any animal called?
What are the three laminæ which form the *skin* of animals called?
How are the three divisions of the skull named?
What is a Sledge?
What is the Small Pox, and what disease is an antidote to it?
What is Smoke?
What is a Snail?
What is Snow, and how does Snow differ from hail and hoar-frost?
What is signified by the word Society?
What people inhabit the Society Islands, and what is their condition?
What is Soda?
What is Sound, and how are some of the laws of Sound demonstrated by the Piano Forte?
Who inhabit Spain, what is the character of that nation, and what is its capital?
What is the meaning of the term Spectrum?
What effect has light upon a Prism?
What are the Prismatic colours?
What proportion did Sir Isaac Newton discover the Prismatic colours severally to bear in the Spectrum?
What is Spermaceti?
Of what does the Spine consist?
What is Sponge?
What, among the Greeks, was the Stadium?
What is the Stag, and in what countries is he found?
What are Stars?
What number of Stars can be seen by the naked eye?
How many Stars did Herschel count?
What are Nebulæ?
What is steam, and how is water expanded by the action of Heat?
What is the Steam-Engine, and what is its operation?
What is Steam navigation, and who, in America, was the principal promoter of it?
What is the Stomach?
Who were the Stoics?
What is the natural history of the Stork?
What is the principal church in London?
What signifies the word Stratum?
What is Subdivision?
What is a Substitute?
What is Sugar, and how is it obtained?
What are Sulphates in Chymistry?
What is the Sun, and what is his diameter?
Are there spots upon the Sun's surface, and what are they called?
What is a Supernumerary?
What is Surgery?
What is the Swan, and what are its peculiarities?
Who inhabit Sweden, what distinguishes that country, and what is its capital?
Who are the Swiss, and what is their character?
What remarkable fish is found in the Mediterranean near Sicily?
What is a Symbol?
What is signified by the word System?

T.

What is the nineteenth letter of the alphabet, and what are some of its most remarkable uses?
What was the value of the Sum called a Talent among the Greeks and Hebrews?
What is the vegetable substance called Tannin, and what is its use?
What is a Tarantula, and what effect does its bite produce?
Who are the Tartars, and what is their character?
What is Tea, and what are the principal sorts?
What are Teeth, and when do they successively appear?
What is a Telescope, and what is its use?
Into what kinds are Telescopes divided?
What is the *object*, and what is the *eye-glass*?
Whose was the largest Telescope known, and how was it constructed?
Is the inventor of the Telescope known?
By what experiment did Galileo procure for himself the honour of inventing the Telescope?
What is Tenacity?
What is Tension?
What are Termes, and what are their habits?
How is the botanic class Tetradynamia described?
How is the order Tetragynia described?
How is the botanic class Tetrandria described?
What is a Theatre?
What is Theology?
What is Thrashing, and how is it performed?
What is Thunder?
When is lightning harmless, and when dangerous?
What are Tides, and by what are the *ebb* and *flow* of the sea occasioned?
What philosopher proved that the moon's attraction affected the tide?
What are Spring Tides?
Do the ebbing and flowing of Tides follow any rule, and what is that rule?
To what family in Zoology does the Tiger belong, and what are his habits?
What is Tin, and what are its properties?
What is the meaning of the word Tithe?
What is signified by Title (in Law?)
What narcotic plant was introduced into England by Sir Walter Raleigh?
What is a Tornado?
What fish is endowed with a strong electric power?
What sensations are experienced by the Touch?
What are the Trade winds?
What is Tragedy?
What is Transformation?
What is Transparency?
What (in Law) is Treason, and of how many kinds?
How is the botanical class Triandria described?
What was a Triumphal Crown?
What (in Geography) is understood by the Tropics?
Are tropical regions more or less hot than the rest of the earth?
What is Troy Weight, and whence is it so called?
What are the capacity and weight of a Ton?
Where is Turkey—what is its population, and what is the national character of the Turks?
What is a Turnpike?
From what tree is Turpentine obtained, and by what process?
What is a Turtle, what species is eaten, and from what species is *tortoise shell* procured?
Why is ihe Tuscan order of architecture thus called?
Where is the city of Tusculum, and why is it celebrated?
What are Types?
What is Typography?

U and V.

What is the twentieth letter of the alphabet, and what are some of its remarkable uses?
What was the Vallar Crown of the Romans?
What signifies the term Valve?
What are Valves (in Conchology) and how are they distinguished?
What is a Vase?
What is Velocity in its general signification?
What is the Velocity of Light—of Sound—of Wind—of Cannon Balls—of Bullets discharged from a gun, and of sundry animals in motion?
What is the largest vein in the human body, and what is its office in the animal economy?
What great vein is situated at the entrance of the Liver?
What is Ventriloquism?
Who was Venus?
What is the second planet in the Solar System?
In what time are the different revolutions of Venus completed, and what is the appearance of that planet?
What are the characteristics of the animal class Vermes?
What are Vertebræ?
Who, among the Romans, were the priestesses of Vesta?
What is Vibration, and how many vibrations does a pendulum make in an hour?
In what countries is the Vine cultivated, and of what use is its produce?
What is the only poisonous reptile of the British islands, and what are its habits and appearance?
What is that law of nature called Vis Inertiæ?
What is Vitriol, and what are the principal sorts?
What is Ultramarine?
What is the ceremony of Unction, and by whom practised?
What is a University, and of what does it consist?
What are Volcanoes?
Do Volcanoes appear at sea?
Do earthquakes precede the eruption of Volcanoes?
How many Volcanoes are there known to exist?
What is Uranum?
What are two of the northern constellations?
Who was Vulcan?

W.

What is the twenty-first letter of the alphabet, and to what languages is it peculiar?
What is the Wake of a Ship?
In what regions is the Sea-Cow numerous?
What is a Ware-house?
What is a Wasp, and how does it differ from the Bee and the Hornet?
What sort of instrument is a Watch?
Of what parts does a watch consist?
How long since watches were invented, and where are they extensively manufactured?
What is a Water-Spout?
What proves that Wax is a vegetable product?
What is the principal operation in the preparation of all kinds of cloth?
What is the cubic weight of Water, and what are its chymical elements?
What is the freezing, and what the boiling point of Water?
What is the expansion of water at 212°; at 226°; and at 267° of the thermometer?
What is the action of water upon vegetables?
What portion of Sea-water is Salt, or muriate of Soda?
How is salt obtained from sea-water, and why is rain *fresh* water and not salt?
What effect has crystallization or freezing upon water?
Does water readily combine with other substances?
Why is water sometimes called *hard*?
Why is the fourth day of the week called Wednesday?
What is Weight, (in physics,) and how distinguished?
What is the first law, demonstrated by Sir Isaac Newton, in relation to the uniformity of Weight?
According to what law does Weight vary on different parts of the earth's surface?
Has the *same body* at different distances from the earth the *same weight*?
What is the law by which Weight diminishes?
Do fluids in which bodies are immersed, lose any weight by the immersion?
What weight is a gallon of Oil, a cubic foot of Water, and one pint of Water?
What huge animal inhabits the ocean, and what are its dimensions?
What are the products of the Whale, and what species of whale is most profitable?
Of what substance is the best bread made, and how is it prepared for use?
What is a Whirlwind?
What are Whispering Galleries?
Who were Wickliffites?
What is a Windmill?
What is Wine, and what are its constituents?
How does Mr. Locke define Wit and Judgment?
What is the Woodcock, and for what is it esteemed?
What is a Woodpecker, and what is peculiar to it?
What is a Writ, and how are Writs distinguished?

X.

What is the twenty-second letter of the alphabet, and what are its most remarkable uses?
What small vessels are navigated in the Mediterranean Sea?

Y.

What is the twenty-third letter of the alphabet, and what are its most remarkable uses?
What is a Yacht?
How many days are in a Year?
How long from the Spring equinox to the autumnal, and from the Autumnal to the spring?
What is Yest?

Z.

What is the twenty-fourth letter of the alphabet, and what are some of its principal uses?
What is the Zebra?
What is Zoology?
Into what branches is Zoology divided?
Into how many classes did Linnæus divide animals, and how are the classes subdivided?
What are the orders and genera of the first class in Zoology?
What are the orders and genera of the class Amphibia?
What are the orders and genera of the class Pisces?
What are the orders and genera of the class Insecta?
What are the orders and genera of the class Vermes?
What are Zoophytes?

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